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ABSTRACT

More than 20 case studies exemplifying innovative techniques in the use of closed circuit television for employee training in organizations not primarily dedicated to education have been collected. Case studies have been selected from the military, the medical professions, sports, and business organizations, primarily in Great Britain. Uses of closed circuit television include managerial and instructor level training, skills training, accident prevention, sales training, and product promotion. A summary of multinational use of videotape cassettes for training is included. (STS)

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THE IMAGINATIVE USES OF CLOSED CIRCUIT TELEVISION IN THE TRAINING OF STAFF AND MANAGERS

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UNESCO
November 1974

THE IMAGINATIVE USES OF CLOSED CIRCUIT TELEVISION
IN THE TRAINING OF STAFF AND MANAGERS

CASE STUDIES COLLECTED AND EDITED FOR THE ASSOCIATION FOR PROGRAMMED LEARNING AND EDUCATIONAL TECHNOLOGY BY DR. JOHN LEEDHAM, CHAIRMAN OF PUBLICATIONS.

"The decisions made at the 17th session of Unesco's General Conference committed the Division of Methods, Materials and Techniques to develop studies on 'Suitable methods for using the close-circuit television facilities now being installed or to be installed in the foreseeable future, in teacher training colleges in a number of developing countries, and a comparative study made of the results achieved by their use under local conditions so that they may be introduced in all training colleges.'"

UNESCO CONTRACT 506400 19 December 1973

The Association for Programmed Learning and Educational Technology shall conduct a study on the use of close circuits of television in the training of staff and managers in organisations not specially devoted to education such as Industry, Administration, Navy, Army, etc. This study of approximately eighty pages will present a selection of some representative case studies of particularly imaginative uses of CCTV.

UNESCO ESM/95/74/I/166 10 June 1974

"Imaginative, in our understanding, refers to bringing into educational circles, ideas about the uses made of CCTV outside the formal educational constraints. By so doing, Unesco's intention is to try to open new prospects to educators."

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A CATEGORY OF CASE STUDIES

Uses at Managerial and Instructor Training Level (Page 11)

A Novel Means of Communicating within a Large Company	Stafford	British Petroleum
Rolling Role Play	Clements	Wellcome Foundation
Improving Presentation Techniques	Cripps and Austin	The Royal Navy
The Army Recruiter's Course	Fricker and Clary	The Army (Separate Paper)

Skills Training (Page 28)

Learning Saturated Programmes	Manley Cooper	The Road Transport Training Board
Advanced Photographic Training	Cripps and Austin	The Royal Navy
The Jaguass Training Scheme	Clarke	Royal Air Force
Learning to Play Golf	Blackadder	Bayston Sports Equipment
Weapon Training Scheme Computer Handling Nurse Training	Fricker and Clary	The Army (Separate Paper)

Accident Prevention (Page 50)

Mobile CCTV Units Use in Mine Safety Campaign	Gay	National Coal Board
Investigation into the use of CCTV in Simulated Damage Control Situations including Fire and Flood	Cripps and Austin	Royal Navy

Sales Training and Promotion (Insight Report) (Page 59)

Customer Training By Cassette	Waterbury, Farrel
Coca-Cola Training Scheme	Coca-Cola
Hewlett Packard Training Scheme	Packard
A World Wide Distribution	IBM Training Scheme
A Cassette Network with Language Complexity	FMC Corporation
A Cassette Product Selling Scheme	Ford Motor Company

A CATEGORY OF CASE STUDIES (Cont'd)

Rehabilitation (Page 60)		
CCTV at a Rehabilitation Unit	Clarke	Royal Air Force
Para Medical Training (Page 63)		
Microscopy at R.A.F. Halton	Clarke	Royal Air Force
Film Revision Procedures (Page 66)		
Revision of 16 mm Film by CCTV Inserts	Cripps and Austin	Royal Navy
CCTV in the Army (Page 68)		
An account of development	Fricker and Clary	R.A.E.C. The Army
Distribution Systems (Page 81)		
A Review of Contemporary Practice in the U.S.A. and G.B.	Whittington	Insight

Function or Characteristic of Study	Information Distribution System	Cost Effective	Time Effective	Skills Training	Colour System	Management Training
Wellcome Foundation Roll'ng Role-Play Page 18		X	X			X
Army Recruiters Course Page 74		X			X	X
Royal Navy Improving Presentation Techniques Page 26			X			X
Road Transport Board Learning Saturated Programme Page 30			X	X	X	
Royal Navy Photographic Course Page 54			X	X		
Insight Waterbury Farrell Page 84	X			X	X	
R.A.F. Jaguass Training Scheme Page 39			X	X		
Army Weapon Training Page 75		X	X	X		
Army Nurse Training Page 76		X	X	X		
Bayston Sports Learning to Play Golf Page 44				X		

Function or Characteristic of Study	Information Distribution System	Cost Effective	Time Effective	Skills Training	Colour System	Management Training
British Petroleum Novel Communication System Page 13	X		X		X	X
Insight Coca Cola Sales Training Page 03	X	X			X	X
Royal Navy Revision of 16mm Film Page 66	X	X			X	
R.A.F. Rehabilitation Training Page 60			X	X		
R.A.F. Pathology Study Page 63			X	X	X	
Army Immediacy Page 73		X		X		
Army Group Paced Instruction Page 75	X	X	X			X
Royal Navy Simulated Damage Control Page 56	X			X		
National Coal Board Safety Campaign Page 51						X
Army Computer Training Page 76		X			X	X
Insight Cassettes on Tankers Page 85	X				X	

INTRODUCTION

The Association for Programmed Learning and Educational Technology was asked in July 1973 to conduct a limited study which would have bearing on some significant and important experiments in the use of closed circuit television for the training of staff and managers in the organisations not especially devoted to the problems of education such as industry or administration; the Army, the Navy, the Air Force. "The problem is to know how CCTV is used and combined with specific training techniques."

After reviewing the resources available and the field to be covered, the Association appointed Dr. John Leedhan, its Chairman of Publications, to pursue the study. A work plan was implemented based on the following considerations.

The term 'training' was judged not to be exclusive. Thus, schemes devised for management training, for organising staff participation in policy making, and for increasing the potential of junior sales executives, were judged to be equally significant with training schemes introduced to increase safety awareness, to teach the handling of dangerous materials or weapons, or to survive in an underwater environment.

The apparatus required for closed circuit television was accepted as ranging from the simple portable pack to full 2" colour studio productions.

Discussion on the word 'imaginative' suggested that the employment of closed circuit television in a given circumstance, such as role playing at managerial level, might or might not be imaginative, and that true definition would only be achieved by the examination of specific case studies. For this reason the participating bodies should represent a wide spectrum, but must include organisations with real commitment and a record of successful usage.

The Work Plan up to Approval Level

This was seen to exist as four progressive stages.

(1) A preliminary review of the contract and of Association resources by the relevant sub-committee.

(2) The extension of Association resources by reference to other bodies.

(3) Direct enquiry of the leading production units, and organisations identified as having relevance to the study.

(4) A convened meeting and discussion of possible case studies by the Principals of the organisations identified in (3) above.

The work plan has been adhered to and the contribution of some twenty-eight representative case studies owes much to co-operative goodwill of the organisations concerned to whom the Association expresses its appreciation.

The Army report was submitted as an overall study of their development of CCTV with particular emphasis on the cost effective aspect. It is not therefore possible to divide their studies into categories but cross referencing is provided.

The report on Distribution Systems submitted by Insight is included as a final item. Its aim is to give an up-to-date account of the function of distributed video tapes and cassettes in the training and information sphere both in Britain and U.S.A.

THE CASE STUDIES

The case studies vary in presentation. A suggested format was followed to some extent, but length and depth of treatment were sometimes questions of relevance to the authors rather than to the report. Topics which would appear to have considerable content were sometimes referred to quite briefly to allow for lengthier comment respecting alternative issues. This is particularly true of the submissions such as those from the Army whose paper discusses pertinently and objectively the larger issues of using CCTV and quotes case studies incidentally to support a thesis of cost effectiveness.

The categorisation of the studies is arbitrary and they are identified by their common elements. The ever present problem was, and is, the classification of studies as imaginative. An original intention

to use imaginative procedures in a training programme often disppoared in practice. As is cited later on (Distribution Systems. Whittington) many commercial institutions employ CCTV to disseminate central policy by making a tape of a chairman or manager outlining institutional intention. Replicated on video tape machines around the country the message may stand out clearer than a circular letter, but the degree of imagination used in programme preparation and presentation would be the factor separating the picture from the letter. It was common to find that the relative newness of CCTV as an expedient masked its imaginative potential. This was not so in the cases quoted below, or if it appears to be so, a special treatment or stress produces the imaginative element that UNESCO sought to isolate in this study.

USES AT MANAGERIAL AND INSTRUCTOR TRAINING LEVEL

Four such studies are instanced:

A Novel Means of Communicating in a Large Company	Stafford	British Petroleum
Rolling Role-Play	Clements	The Wellcome Foundation
Army Recruiter's Course	Fricker and Clary	The Army
Improving Presentation Techniques	Cripps and Austin	The Royal Navy

The study by Roland Stafford, of British Petroleum, instances the effective use of CCTV cassettes used as a distribution system. This could well be the first reported case in Britain of the use of cassettes as distinct from tapes and the emphasis on the ease of manipulation should be remarked.

Clements outlines in detail the use of a single camera chain covering about one hundred Spanish salesman who needed to be re-trained in a short time about certain aspects of a product in the drug market. The standard role-play of "doctor-salesman" using a single recording system would have proved monotonous and irksome. The solution: to have several role plays going simultaneously and for the camera to extract different phases of the sales training from each. Subsequent viewing and discussion on a syndicate basis, where no group commented on its

own performance, led to a 'model' being built up. The imagination component here is undoubtedly the organisation which enabled one video tape recorder to be so effective.

The reference made by Fricker and Clary in the separate report in their section on "Immediacy" states that the Army recruiter's course is now fully based on CCTV procedures and a better student product is claimed. They suggest that the use of CCTV simulators ensures a better overall course design.

The Royal Navy details its own development of micro-teaching techniques and simulation to improve the performance of officers required to give occasional staff briefings. The package so far produced links student preparation, a film presentation, student revision, CCTV recorded performance (no audience) and a final critique. The absence of an audience does not, according to Cripps and Austin, interfere with the student's progress.

There is sufficient diversity within these case studies to suggest that the imaginative use of the more economical range of CCTV equipment can be employed with considerable effect in the training/management sphere.

A NOVEL MEANS OF COMMUNICATING WITHIN A LARGE COMPANY

Roly Stafford,
British Petroleum.

ABSTRACT

Centres or Organisations Involved

One centre distributing to 24 centres.

Date and Duration

January 1974 Two days

Population Target

26,000 staff members.

Decision Maker for the use of CCTV

Chairman of Board

Evaluation

Stated in text.

PROBLEM:

Communication; how to reach as many people within a UK Company as quickly and as interestingly as possible with an important and stimulating message.

ANSWER

Not by the printed word, [redacted] by film, not by a TV link up, but by the use of video cassettes.

In December 1973 the beginnings of a major change in the relationship between the international oil companies, consumer governments and Middle East producer governments was making itself felt. Hitherto, politics, oil supply and pricing had been separate issues; quite suddenly, the Middle East conflict had made them one.

The importance of continuity of oil supplies, particularly to Western Europe, was reflected by the urgent and frequent debates on the subject in the Press and on television. BP was a company likely to be much affected by these events and its UK staff were clearly concerned at the effects upon the fortunes of the company and themselves. It was

therefore decided to bring the issues to them in their offices, factories, refineries and terminals; in doing so it was recognised that no monumental announcement could be made for the problem was still being debated by governments and a means to solve the situation was still being sought. Nevertheless communication and internal company debate was necessary in order that the subject could be authoritatively aired and confidence in the future to some degree assured.

But how to communicate? Through the house newspapers? On film? By television link up? All were considered and all had drawbacks. House newspapers take time to print and distribute and often remain unread, film would probably be better but editing and printing take time and the audience would need to be herded into a darkened room in order to be "spoken to". This was the wrong environment for what we wanted to say, how we wanted it said and how it should be seen. A TV link up was quickly dismissed as being too expensive. In choosing the video cassette system for the first time the criteria were of communicating which the viewer would find agreeable, and very importantly, it was a means by which the message could be seen and heard without resorting to special screening arrangements.

Speed of production was essential because the issue under discussion was newsworthy in the sense that statements were being made by governments and others which could quickly out-date the programme. It was agreed that the most satisfactory form for the programme to take would be an interview with the Chairman. In planning the production, much consideration was given as to whether the interviewer should be a company man or a well-known TV personality. In the event we chose the former since the subtleties of the effect of the crisis upon the company would be better known and understood by a company man and a professional would need to be briefed to a degree that could give the impression of a scripted programme instead of a free ranging discussion. It was also decided to "shoot for real" and not to edit the programme; although this would be more taxing for the performers we believed that it would have a far greater documentary impact than the edited or manipulated interview. Happily the company Chairman is a very experienced film and TV interviewee and since a number of staff are experienced speakers who have appeared on television, the problem of "recording live" did not over concern us. To maintain the reality of the discussion it was decided that there would be no tele-prompting and no rehearsal, the

preparation was limited simply to deciding, in broad terms, the topics for debate.

The production schedule was as follows:

Monday	7.1.74	11.00 a.m.	Discussion with Chairman
Tuesday	8.1.74	7-8.00 p.m.	Record in studio followed by over-night transfer of 2" master programme on to ½" video tapes.
Wednesday	9.1.74	11.30 a.m.	Begin simultaneous playback in the main company London and Home Counties centre which ran continuously except for re-winding until 3.00p.m.

Behind this brief production schedule lay a great deal of rapid planning and improvision.

Eight Philips VCRs and sixteen TV sets were hired, each VTR feeding two TV sets. These were delivered at 9.30 a.m. on Wednesday, 9th January, tested and shipped out by car to the centres, some of which were over thirty miles away. The centres had been asked to find sites through which staff would pass at lunch time and where the equipment could be used, the object being for them to see the programme "in passing", not as a special occasion in a cinema.

In refineries and chemical plants the equipment was also set up at shift change times so that maximum viewing could be achieved. An intricate schedule was followed, leaving one centre, flying or driving to another, so that within three days all main centres and plants in London, Wales, Scotland and Ireland had been visited and some 26,000 staff had been given the opprtunity of seeing the programme.

Since using VCRs was a novel means of reaching the staff, a study was made to establish the viewership, specific recall and attitudes related to the content of the interview and the communication techniques used.

A 6% sample, representing BP staff accommodated in three centres around London, was interviewed by telephone on Friday, 11th, and Monday, 14th January. The results are based on 251 interviews and related to staff who were in the office on the day of the screening of the

interview. The potential viewership on the day of the screening was 92% of the total London area staff. The interview was seen by 63% of staff; more male staff watching than female (70% - 50%). The largest recall was of the Chairman's optimism, recalled by one third of the audience, followed by 18% who recalled that the Chairman discussed the general future of the Company.

		% of Those Watching	
Points recalled-Unprompted	Overall	London	Outer London
Optimism	36	33	45
General future of company	18	18	20
Profits	17	14	28
Price/Cost increase	13	14	9
Decentralisation	11	11	11
Streamlining	10	8	17
Staff security	8	7	9
Staff cuts	6	7	6
Other	10	8	17
Nothing	27	31	20

Relatively few suggested points which should have been covered but were omitted, most of those who had not seen all of the interview being reluctant to answer.

In general staff found this to be a useful method of improving communication within the Company.

		% of Those Watching	
Rating	Overall	London	Outer London
Very useful	46	42	57
Fairly useful	35	35	34
Not very useful	9	10	6
A waste of time	1	1	0
Don't know	9	12	3
	100	100	100

The interview was seen by well over half of London and Outer London staff. In general the technique is regarded as a useful one and this, coupled with the high viewership and the length of time spent watching, indicated a real interest in the company's policies and activities.

Overall this event was well received and seen as a welcome step towards the improvement of company/staff relations.
Source: Excerpts from BP Marketing Research Survey dated 5th February 1974. The use of video cassette players for the exercise outlined above was successful because of the speed with which it was achieved and the novelty of the method. It is worth remembering that although professional communicators have been reading and talking about cassettes for years, by and large the general public are quite unaware of their existence and are intrigued and interested in programmes presented in this way. Our research clearly indicates that the use of cassette players was very acceptable as a means of providing information and stimulating creative debate and it is our intention to expand their use into other areas.

It is of interest that the operating of the equipment is extremely simple, and, in the execution of this project, only one individual was a technician, the other seven were drawn from London office and required only thirty minutes instruction and familiarisation before undertaking the responsibility for this nationwide exercise.

THE IMAGINATIVE USE OF TELEVISION IN THE WELLCOME FOUNDATION LIMITED

THE ROLLING ROLE-PLAY

Ronald Clements, Group Marketing Training Manager,
Wellcome Foundation.

ABSTRACT

Centres or Organisations Involved

One

Date and Duration

July 1973 One day

Population Target

94 salesmen

Decision Maker for the use of CCTV

Group Training Manager (Author)

Evaluation

See Summary

This paper describes a technique for involving large groups of people in a role-play situation using the absolute minimum of video equipment. The particular event described took place in Madrid at the local office of a British pharmaceutical company. Almost one hundred salesmen took part in the exercise.

Small groups were formed to discuss a particular problem, the solution to which was to be acted out in a role-play selling situation. A 'customer' and 'salesman' were nominated from each group.

Around a single television camera several role-play sales talks were set up. All the role-plays commenced at the same time and continued simultaneously. The camera "rolled" from one role-play to another until all the groups had been covered. In this way each segment of video caught a different phase of the sale, from the opening statement to the closing of the sale.

INTRODUCTION - THE COMPANY

The Wellcome Foundation Limited is a research-based pharmaceutical company of high repute. From headquarters in London it manages operating companies in every part of the world. It is committed to develop and market products and services for the prevention and treatment of disease in man and animals. The Foundation is unique in that all its distributable profits are given to its sole shareholder, the Wellcome Trust. These profits are re-distributed by the Trust (which is a registered charity) for independent medical research all over the world.

CCTV IN WELLCOME

Closed circuit television has been used as a training tool by the Foundation since 1968. At the time it was felt that video-tape recording could offer nearly all the advantages of 16 mm cine film without most of the disadvantages.

Because of the international nature of the Company, Group Headquarters in London opted for Ampex 1" equipment. It seemed to be the most compatible of the near professional systems then available.

Since 1968 there have been two major uses for CCTV in Wellcome. Firstly; the production of fully-scripted presentation and programmes which are recorded for international distribution. And secondly; five "here-and-now" record and playback sessions in a variety of role-play situations.

Recorded programmes have covered a wide range of topics including Company history and organisation, "newsreels" of important Company events, features on selling skills and medical lectures. Of these, some of the selling skills programmes have probably been the most creative in that they are based on certain elements of current learning theory. Information is presented and questions are posed. Viewers are then instructed to stop the V.T.R. and make responses (generally through group discussion) to the questions. They are given the feedback and knowledge of results as the programme continues. The

biggest use of video equipment for role-playing has been for practice detailing (a mock selling situation involving a medical representative and a "doctor"). It is also widely used on courses where recruitment and career counselling skills are being practised.

Apart from the two main uses, the equipment is used to improve teaching skills, styles of presentation and communication, and things of that nature. Video is also invaluable to record top management speeches to courses and conferences.

As the number of uses for CCTV has increased, so the number of people using it has grown. At the time of writing there are sixteen television units in the organisation. Almost half of them use Sony ½" equipment, whilst the remainder use Ampex 1". Of the Ampex users, the most recent purchaser was the Spanish Company whose experience of a rolling role-play will now be described.

ROLLING ROLE-PLAY - THE PROBLEM

In 1973 the Foundation's Spanish company decided to buy CCTV equipment and use it at a national sales meeting in Madrid. The purpose of the meeting was to re-train men on certain aspects of a particular product. Group Marketing Training Department in London were asked for suggestions on how to make the best use of the equipment. The Spanish company were particularly interested in getting as much active participation and involvement as possible within the limits set by the equipment They had one video recorder, one camera (with zoom lens) and one microphone. There were ninety-four people attending the meeting.

ROLLING ROLE-PLAY - THE SOLUTION

In a normal role-play session a salesman details to a "doctor" whilst the rest of the group watch the role-play on a monitor. A discussion and critique session follows, then the role-play is replayed and further discussion takes place. This is repeated until all, or most, of the group have performed. This method would clearly have been impossible with the group of ninety-four people in Madrid. The task of acting out, watching and re-playing even half-a-dozen practice-details would have been monotonous in the extreme.

If the meeting was to be kept interesting, then repetition had to be minimal, with participation maximal. After examining several possibilities it was decided to have only one role-play and build from that.

In any selling situation there are several clearly defined phases; opening the sale; getting the customer's attention; holding his attention and creating desire; dealing with any objections he might raise; and finally closing the sale by asking for an order. All Wellcome representatives are trained to work through these stages, and it seemed a good idea to substitute "role-players" at each stage.

It was a simple step from the notion of substitution to the final solution to have several role-plays simultaneously and for the camera to pan from one to the other, eavesdropping on each for about five minutes. This makes it possible to capture the various phases of the sale without involving several participants and all without too much disruption.

By making each"actor" perform on the instructions of a syndicate it is possible to get more people actively involved. Participation can be stretched even further by organising syndicate discussion on the replay and having a reporter from each syndicate report back to the plenary session.

The final organisation of the rolling role-play was as follows:

(a) in advance of the meeting five syndicates were drawn up and a chairman and reporter nominated for each group;

(b) on the eve of the meeting syndicate chairmen attended a briefing meeting where the method of rolling role-play was carefully described;

(c) at the first session of the sales meeting the rolling role-play was described. Each delegate was given a printed brief outlining the selling situation to be covered in the practice detail;

(d) the meeting split into syndicates to discuss the problem. Each syndicate nominated two "players"; a salesman and a doctor;

(e) the syndicate broke up and the rolling role-play was recorded. The role-play was set up on a cross-over basis like this:

Role-Play A:	Syndicate	1	Salesman	S^1	sold to	Syndicate	2	Doctor	D^2
B:	"	2	"	S^2	sold to	"	3	"	D^3
C:	"	3	"	S^3	sold to	"	4	"	D^4
D:	"	4	"	S^4	sold to	"	5	"	D^5
E:	"	5	"	S^5	sold to	"	1	"	D^1

(Take in diagram of rolling role-play).

(f) in the plenary session the rolling role-play was viewed by all delegates. It was played back twice. Each syndicate was instructed to watch a segment and use it as the subject of a syndicate discussion. So that:

Syndicate	1 watched	Role-Play D
"	2 watched	" E
"	3 watched	" A
"	4 watched	" B
"	5 watched	" C

in this way no syndicate was watching or commenting on its own players and therefore more unbiased.

(g) the meeting reconvened and syndicate reporters presented the comments and criticisms of their syndicate;

(h) a general discussion on the syndicate report took place, and a "model" detail was built up.

The exercise took a whole working day to complete.

The usefulness or otherwise of an exercise of this nature would be very difficult to measure objectively. It is very much an act of faith. However, it is possible to make both positive and negative observations.

NEGATIVE OBSERVATIONS

1. A great deal of space is needed in an exercise as large as the one described. Each role-play must be well separated from its neighbours to avoid background conversation.

2. The limitation of only one microphone can be a nuisance. This can be distracting and disconcerting for the participants.

3. Without separate microphones, a sound mixer and a head-set, it is impossible to switch from role-play at the most desirable moment. The arbitrary five minutes at each table can be a bit "hit and miss".

4. People can be confused, especially if the exercise is as complex as this one and uses a double cross-over.

5. Not every participant was able to see himself on the television screen.

POSITIVE OBSERVATIONS

1. Rolling role-play avoids the monotony of the normal role-play session. Constant repetition (especially when the same situation is being recorded several times) is extremely boring and de-motivating.

2. A great deal of time is saved with rolling role-play. In the situation described ninety-four men were trained in one day. Using normal role-play techniques it would have taken four or five days.

3. It is a novel way of conducting a role-play session. People who have experienced the usual method would probably enjoy this new experience.

4. Rolling role-play is economical. It offers the maximum use from a limited amount of equipment. The financial advantage is that large numbers of people can be trained at a very low cost.

5. The greatest possible value is extracted from a single role-play. Much better use is made of the replay because it is analysed in depth by several syndicates.

6. When a rolling role-play is used with a very large group, then only a few people are placed in a potentially frightening situation. This is especially important when participants are using CCTV for the first time.

AN ALTERNATIVE METHOD

The rolling role-play technique can be used with much smaller groups than the one described earlier. A far less complicated method would be to set up a practice selling situation. At appropriate points during the role-play one or other of the participants would be told to stand down. Another member of the group would replace him and continue at the point where his predecessor left off.

This method has obvious advantages over the ordinary role-play. It is less boring and a large number of people can be involved.

Additionally it is possible to assess each individual's grasp of the complete selling situation without making each one do a complete role-play.

SUMMARY

This paper has described a unique and unusual situation when almost one hundred men H/D to be involved in a role-playing session.

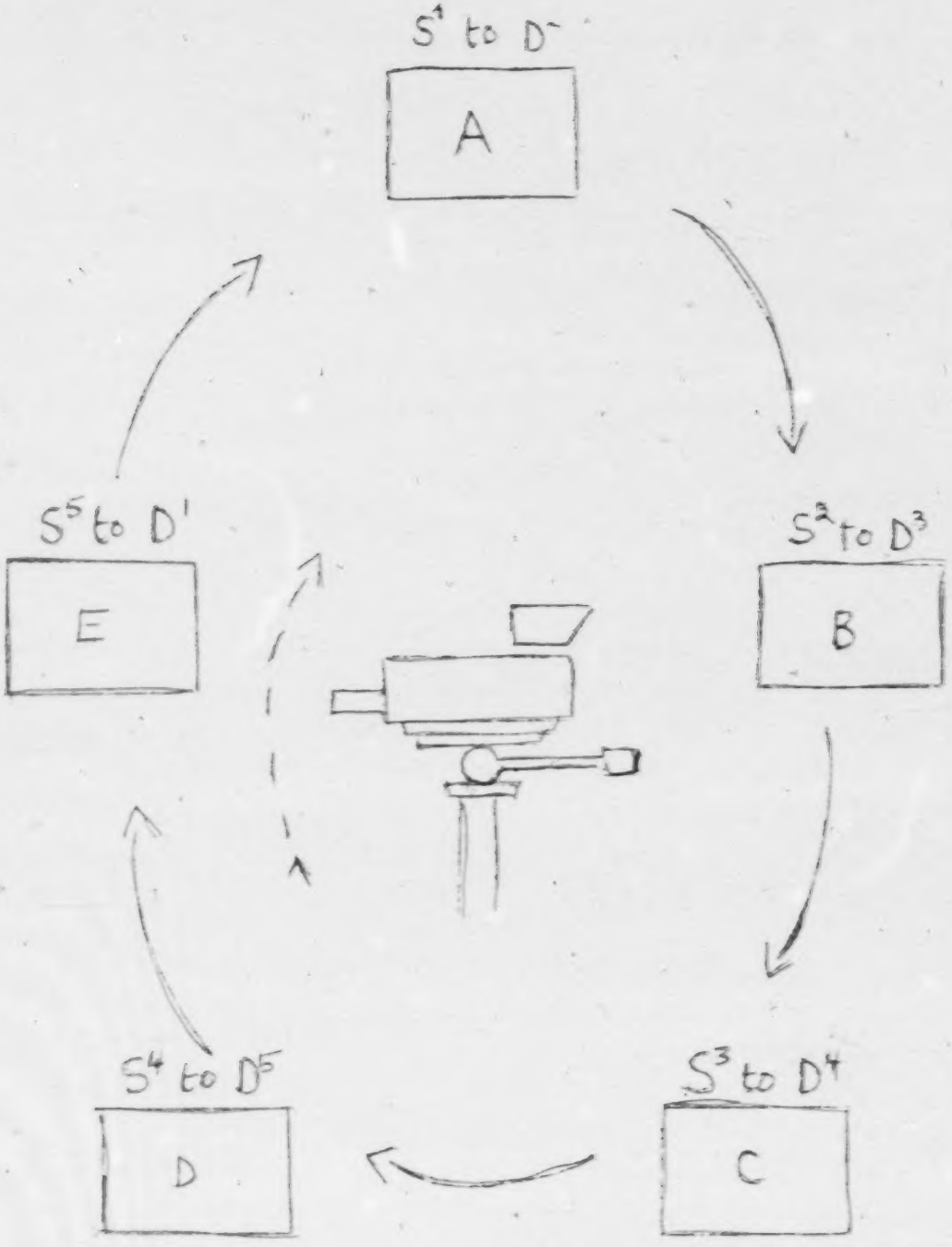
By using the simultaneous rolling role-play technique, together with syndicate discussions, the very maximum amount of participation was obtained using one camera set-up.

This technique is recommended in situations where fairly large groups are to be trained quickly for a minimum capital outlay on equipment.

Although this paper describes a sales training situation, the technique should be transferable to other training areas. In teacher training, for example, a rolling role-play could be applied to practice teaching sessions.

Finally, rolling role-play seems to be an effective training technique. Within two months of the event described here, the sales of the product around which the rolling role-play was built began to improve. At the time of writing (five months after the event) sales are still improving. Whilst many factors operate in the market, it could be fairly claimed that the rolling role-play made its contribution to this particular sales success.

PROCEDURE FOR A ROLLING ROLE-PLAY



THE USE OF FILM AND CCTV IN A SHORT COURSE TO IMPROVE PRESENTATION TECHNIQUES

Inst/Cdr. D.E. Cripps
Inst. L/Cdr. T. Austin
ROYAL NAVY

ABSTRACT

Centres or Organisations Involved

One

Date and Duration

Running for one year.
Each course takes one half day.
Developed during seven month trial.

Population Target

Officers and Ratings of any rank or specialisation except Instructor Officers.

Decision Maker for the use of CCTV

To hold trial: R.N. School of Education and Training Technology
To implement result: Royal Naval Home Command

Evaluation

See paragraph 6 below

1. The existing Royal Naval School of Educational and Training Technology started life as a school for Naval Instructors. Personnel who were involved or about to be involved in training roles as instructors attended the school for a five day Instructional Techniques Course aimed at the classroom teacher. CCTV was and is an integral part of this course in that students are filmed during their 'lessons' and then see their efforts immediately after with an experienced member of staff. The 'lesson' is analysed critically, both good and bad points being identified.

2. Last year a need was identified to construct a short course, to be available on demand, to enable those officers whose duties involved giving occasional presentations or briefings to visitors or other members of a naval staff. If the course was to be made readily available for small numbers of individuals it had to be designed to minimise the involvement of staff and to be mainly self-instructional.

3. The course makes use of the film "The Floor Is Yours" and the accompanying programmed booklet "Business Speaker's Guide". These cover the construction of a script suitable for presentation and illustrate some general points in the performance attributes of a good presenter. The film and booklet appear at first sight to be aimed at the more junior management but experience has shown that they are equally acceptable at all levels.

4. The course takes half a day and the student arrives with a previously prepared presentation aimed to last about 20 minutes. He is first shown the film (30 minutes) and is then given about an hour to restructure his presentation with the aid of the guide. If he feels it necessary he may then discuss his script with a member of staff. He then gives his presentation in front of a fixed television camera (operator only required to switch on and later to switch off). Finally his recording will be played back to him in the company of a member of staff.

5. We have found that a pure self-criticism during playback - even with an assessment guide - is unwise, since the student will tend to magnify his faults and not notice his strengths. The absence of an audience for his presentation is acceptable at this level of training, although an early student asked for 'simulated' humans even if only a mop resting upside down in the chair since he found himself addressing his remarks to the seats of the chairs.

6. Insufficient students have used the course to date to measure objectively their reactions but those who have, have expressed their appreciation of the benefit they have received. RNSETT is now able to offer this opportunity to obtain this benefit to many more people than in the past due to the reduction of staff involvement.

ARMY RECRUITER'S COURSE

Lt. Col. J. M. Fricker
Major D. W. Clary
R.A.E.C.
The Army.

The Army's comments on this course are narratively stated in the separate study.
(See Contents list and reference matrix)

THE USE OF CCTV IN THE SKILLS TRAINING

The seven identifiable programmes concerning skills training outlined in the case studies all contain the essential elements of vocational or operator training, but all instance a variety of approach which appears to distinguish them as more imaginative than other training situations known to employ CCTV similarly.

Learning Saturated Programmes	Manley Cooper	The Road Transport Training Board
Advanced Photographic Training	Cripps and Austin	Royal Navy
JAGUASS Training Scheme	Clarke	Royal Air Force
Learning to Play Golf	Blackadder	Bayston Sports Equipment
Weapon Training	Fricker and Clary	Army
Computer Handling	"	"
Nurse Training	"	"

The case study submitted by Manley Cooper stressed the overall ability of CCTV to instruct by allying it to other presentations such as training manuals, slide presentations and instructor as a comprehensive

and comprehensible package. The insistence on the exact replication of the audio text to match the print of the training manual is a point often made by other trainers responsible for operator training.

Fricker and Clary in the Army case study also stress the value of CCTV in presenting a carefully organised multi-media programme on one presentation screen. They say that colour telecine, film, slides, diagrams and charts can all be effectively combined within the small screen facility of CCTV.

Cripps and Austin in a detailed study outline the advantages to be gained when training cine photographers in production techniques. By using CCTV as a 'live' visual aid in the classroom, lecture time has been significantly reduced by allowing more time for practical work. By using a portable CCTV camera as a simulator for a cine camera with immediate playback of results, camera and production techniques are learnt more quickly and effectively.

The Royal Air Force quote their JAGUASS training scheme as a successful use of CCTV. The Jaguar aircraft is in operational requirement, and the CCTV training scheme for familiarisation and training programmes is custom built to specific instructional requirements. These requirements involve the use of helicopter and out-of-door training schedules. There is considerable economy in the preparation and use of such material as against the withdrawal of an operational aircraft for training purposes.

The three cases quoted by the Army concern the use of group-paced instruction employing CCTV as alternatives for, or in addition to the human instructor. Their examination of the prejudices likely to be encountered and the degree of effectiveness to be expected is authoritatively based on much experience.

The use of CCTV in skills training is likely to appear less imaginative than in simulation, role playing or disaster storming, but the essential imaginative deployment of CCTV techniques as alternatives to traditional systems appears to have much to commend it. It is of note that the quality of the final product is claimed to be upgraded in several of the cases reviewed here.

THE IMAGINATIVE USES OF CLOSED CIRCUIT TELEVISION IN THE ROAD TRANSPORT INDUSTRY TRAINING BOARD

The Classroom Teaching Aid

N.C. Manley-Cooper
Road Transport Board

ABSTRACT

Centres or Organisations Involved

One Centre. Production for use in up to 120 Group Centres

Date and Duration

Produced 1972-1973
Ten programmes in ten months.
Each programme of 15 minutes.
Total study time 6 weeks.

Population Target

All units needing to train first and second year apprentices about vehicle maintenance, safety factors and the like.

Decision Maker for the use of CCTV

The Road Transport Board and Technical College Lecturers.

Evaluation

The evaluation is 'on-going'. Programmes are being tried out and reported upon currently in several centres.

This paper describes techniques used to apply the television media to a classroom teaching situation whereby a "learning-saturated" programme may be produced by virtue of an advantage particular to CCTV: the teaching media is capable of being used in the classroom in daylight, and under the full control of the class tutor. Supporting Instructors'

Notes detail the exact commentary, 35 mm slides are available for all diagrams, and actual equipment may also be introduced.

Introduction

The Road Transport Industry Training Board was formed under the Industrial Training Act of 1964 and produced Training Recommendations, Manuals and Training Programmes to fill all the training needs of all companies within the scope of the Board under this Act.

The Board has two major training centres known as Multi Occupational and Training Educational Centres (MOTECs), one based at High Ercall near Shrewsbury and one at Livingston in Scotland. There are also some 120 Group Training Associations throughout the country where local companies have formed themselves into a training group sharing a Training Officer and training premises. Some 200 Technical Colleges also run integrated training courses on behalf of the Board.

The Training Methods and Techniques Department

This department is in effect a Visual Media Resources Centre for the supply of all forms of training support material required by the Board training outlets. It consists of a Graphic Section, Photographic Section, Film Unit and Scriptwriter, Visual Media Library and fully equipped 3 colour camera television studio with 2 inch VTR capability and telecine facilities. Both the major training centres have CCTV facilities on one inch standards using the equipment in the conventional manner for immediate replay training situations and possessing the capability of demonstrating small objects or operations to large groups of students. The facilities are also used in the Instructor training role. All forms of training support material are produced by the department including overhead projector transparencies for training manual diagrams, slide and tape commentaries, specific training films, and colour television programmes on a variety of subjects; also multi-media package as required by the training outlets. All of this output is available for sale or hire both to companies and organisations falling within the scope of the Board and to all other training or educational centres.

The Training or Learning Saturated Concept

The use of closed circuit television has been widely exploited in the training field in such situations where immediate replay of all forms of role playing makes it an invaluable training aid. Its capability of being able to display to large groups intricate operations in small areas where normally only one or two students could actually see previously has also been exploited.

However, a further application lies in the capability of modern equipment to be used by an Instructor with a good degree of reliability. This has been rapidly increased by the introduction of video cassette equipment.

This fact coupled with the advantage of daylight viewing within a classroom and the capability of stopping, starting and rewinding the programme led the Board to examine the possibility of producing short programmes which could be far more 'fact packed' than the conventional film programme.

A series of programmes was selected on "Basic Mechanical Principles" aimed at first and second year Apprentices. Advice was sought both from Technical College lecturers and the manufacturers of the equipment to be demonstrated. The programmes were designed to last between 15-20 minutes to tailor into a 45 minute lecture period with introduction, questioning and replay of any particular problem area.

To allow the instructor to prepare his lesson plan a complete commentary in the form of Instructors' Notes was provided thereby allowing him to mark off where he wished to stop the programme to ensure students had learnt each particular operation and, if necessary, to replay it until the problem was clear.

Naturally, in some cases it was necessary to introduce diagrams to ensure that the theory was being understood. In such short programmes it is not possible, or good television, to dwell too long on basic theory and therefore all diagrams used in these programmes were also produced on 35 mm slides. This allows the instructor, should he so wish, to use these aids before, during or even after the programme so that he may himself amplify the theory behind the practical operation.

Finally, to make full use of these programmes it is recommended that students are then allowed to carry out the operations on the actual equipment in the classroom or workshop.

Summary

This Paper has described a further extension into the capability of Closed Circuit Television which it is believed will grow with the use of video cassette or video disc type equipment supported by other visual media to produce a multi-media training programme.

The use of this equipment may be seen as extending into a single display for all media as there is no reason that the television monitor should not be utilised for the presentation of a series of visuals, either with or without commentary, such as slide and tape commentary, a whole or part of a film, and also television programmes as described. It is, however, important that the instructor will be using the medium himself that he is involved in the preparation of such programmes in order that they will tailor into the pattern and lesson plan of his own presentation, thus ensuring full co-operation and full utilisation.

CCTV - USE IN THE R.N. SCHOOL OF ADVANCED PHOTOGRAPHIC TRAINING

Inst/Cdr. D.E. Cripps
Inst. L/Cdr. T. Austin

ABSTRACT

Centres or Organisations Involved

One Centre

Date and Duration

November 1973 Actual trial took 3 weeks.
5 months preparation.

Population Target

Fleet Air Arm Photographers of Leading Hand upwards.

Decision Maker for the use of CCTV

To hold trial: Royal Naval School of Photography
To implement results: Naval Air Command

Evaluation

As set out in 'Test Results' below

Introduction

1. Naval Photographers undergo a three-week course at the R.N. School of Advanced Photography and part of the course is devoted to the techniques of 16 mm filming to meet the Fleet Cine commitment in the following areas:

(a) Public Relations: short films up to 20 minutes duration.
(b) Short training films of up to 10 minutes duration.
(c) Press reportage suitable for TV news item.
(d) High and standard speed cinematography for service aircraft and ship trials.
(e) Recruiting, surface weapon marking exercises.

2. A three week course to cover the above is severely limiting and the course has suffered in the past with a lack of practical camera handling. In order to improve this situation a trial was proposed in which for actual filming a portable TV camera and VTR would be used to demonstrate the theory and skills taught in the following areas:

(a) Basic Camera handling.
(b) Basic continuity.
(c) Matching action.
(d) Screen direction.
(e) Camera angles.
(f) Composition.
(g) Connecting sequences.

3. The expected results of using CCTV were anticipated to be:
(a) An immediate feedback to the instructor of the students grasp of the skills being taught.
(b) A greater depth of cine skills as a result of time saved by using an instant access medium.

The Trial

4. Before the CCTV equipment was used, a detailed guide to the assessment of the final product was drawn up since it was considered that any results would only be of value if the same degree of assessment was applied to both media. The assessment involves the visual judgement of the instructor and so a control course was used for the comparison. The assessment guide is outlined in Annex A.

The Control Course

5. (a) This course did not have the CCTV system in their training syllabus.
(b) Six members in the class individually produced a 3 minute film on camera familiarisation. As a team effort they produced a 3 - 5 minute film on basic picture continuity. The latter production forms the criterion for assessment.
(c) The class did not have time to process and print the exposed footage on either assignment due to lecture requirements but did get limited editorial experience with the basic continuity film in which they were supplied with unedited films and required to compose a short production.

The Trial Courses

6. (a) Utilised the CCTV system during their training phase to bridge the gap between lecture and use of cine camera.

(b) Three members in this class each produced a 3 minute training film on camera familiarisation. As a team effort, they also produced a 5 minute basic continuity film.

(c) The class produced an additional 8 minute documentary film.

7. The length of instruction for each course was 120 hours and a breakdown of theory and practical phases is as follows.

Control Course	Hours	Hours	Trial Course	
Lectures	56	20	Lectures	
Shooting	32	36	Shooting	)
Processing	0	8	Processing	) Using 16mm
Printing	0	8	Printing	) film
Editing	32	32	Editing	)
		16	CCTV	
	120	120		

8. The trial course received approximately 30% theory and 70% practical experience as opposed to nearly 50/50 ration for the Control Course. Utilising CCTV as a visual aid, over 50% of the classroom hours required to describe shooting, lighting, composition and laboratory techniques were eliminated, thereby allowing more time for practical work. The techniques were practised using a video camera recorded on video tape, instantly viewed on monitors and analysed by the instructor with the students. This reduced the requirement for lectures to such an extent that processing and printing could be introduced in addition to giving four more hours of shooting.

Test Results

9. Annex B lists the results of the final assessments for both courses. It will be seen that, while the mark for craftmanship remains the same, there is a marked improvement in the Trial Course results for Techniques and Editing. The assessment is on a team-produced film and shows an improvement from 76% to 96%.

Conclusion

10. Although based on a comparison of only two courses, it is considered that the results are sufficiently improved by the use of CCTV to warrant the expenditure of £1, 000 on the necessary CCTV equipment.

ANNEX A

ASSESSMENT GUIDE FOR NAVAL PHOTOGRAPHERS QUALIFYING CINE COURSE

		Max Points
1.	Craftsmanship (How well was the equipment used)	
(a)	Start-stop	2
(b)	Focus	5
(c)	Exposure	5
(d)	Tripod use	5
(e)	Camera use (was it loaded correctly)	3
		20
2.	Techniques (Were they properly used)	
(a)	Composition	10
(b)	Screen direction	5
(c)	Camera angle selection	10
(d)	Basic sequence shot	5
(e)	Basic continuity concepts followed	10
		40
3.	Editing (Equipment usage and techniques of editing)	
(a)	Splices made properly	2
(b)	Cleanliness of finished film	3
(c)	Editing tempo	10
(d)	Story concepts	15
(e)	Basic sequence utilisation	10
		40

ANNEX B

COMPARISON OF MARKS AWARDED TO CONTROL AND TRIAL COURSES FOR BASIC CONTINUITY ASSIGNMENTS - ASSESSED ON THE 5 MINUTE TEAM PRODUCTION

		Possible	Control	Trial
1.	Craftsmanship			
	a. Start-stop	2	2	2
	b. Focus	5	5	5
	c. Exposure	5	5	5
	d. Tripod use	5	5	5
	e. Camera use	3	3	3
2.	Techniques			
	a. Composition	10	8	9
	b. Screen direction	5	2	5
	c. Camera angle selection	10	6	10
	d. Basic sequence shot	5	3	5
	e. Basic continuity concepts	10	8	10
3.	Editing			
	a. Splices made properly	2	2	2
	b. Cleanliness of finished film	3	3	3
	c. Editing Tempo	10	5	8
	d. Story concepts	15	11	14
	e. Basic sequence utilisation	10	8	10
		100%	76%	96%

CCTV AT THE JAGUAR SERVICING SCHOOL ROYAL AIR FORCE LOSSIEMOUTH

F/Lt. K. Clarke
R.A.F. Upwood

ABSTRACT

Centres or Organisations Involved

R.A.F. Lossiemouth for later use elsewhere

Date and Duration

1973 Still on-going

Population Target

Airmen needing to learn servicing skills and procedures for Jaguar Aircraft.

Decision Maker for the use of CCTV

R.A.F. Education Branch

Evaluation

See 'Conclusions'

The application of CCTV to the fields of complex equipment familiarisation and acquisition of behaviours needed for the performance of new or unfamiliar aircraft procedures has not before been attempted in the R.A.F. The proposal to use CCTV in the implementation of the Jaguar Servicing School (JAGUASS) training programme was put forward in the belief that CCTV provides the best alternative to the provision of training aircraft or, at the very least, a comprehensive range of aircraft components for use as training aids. The argument for using CCTV was supported by the very significant financial savings which would accrue should the experiments be successful.

Introduction

In the past, when new aircraft has been introduced into service, the teaching of the new and unfamiliar servicing skills and procedures to airmen has depended on the availability of a training aircraft or a comprehensive range of aircraft components for use as training aids. For reasons of cost these were not available for the implementation of the Jaguar training programme.

It was considered that CCTV was the only viable alternative and that a series of high quality video tapes covering all equipment and servicing procedures would provide a sound basis for the training programme. These video tapes were made on the first production aircraft.

Apart from video recording lectures or presentations, most work in this country has been confined to applications involving feedback or role-playing. The task at JAGUASS is an entirely different one in that CCTV is being used for modelling. Therefore, from the very start of the programme, every attempt was made to ensure that the necessary facilities and expertise were obtained for the production of high quality video tapes which place great emphasis on clarity and detail.

As far as can be ascertained, the use of CCTV in this manner has not been attempted before in the UK. The success of the experiment will not be fully determinable for some years, but the results of the development programme to date, indicate that given adequate resources, the proposition is a sound one andthat its general applicability to similar situations is worth serious consideration.

Equipment

The CCTV equipment used in the JAGUASS training programme is as follows:

1) Shibaden Camera, Model PP 100A
2) Shibaden Camera, Model HV 155

These have proved satisfactory for use in well-lit studio conditions or for recording specific aspects of stationary aircraft in good light conditions in the open air. They are not ideal for recording objects moving at any but the lowest speeds. In addition they do not produce acceptable results in hangars or in aircraft interiors without the provision of external light sources.

3) Sony Video Mixer, Model CMS 110CE
4) Sony Special Effects Generator, Model CSW 110

The production of suitable video tapes is quite impossible without a video switcher or external synchronisation generator. The acquisition of a vision mixer is regarded as a necessity if anything other than single-camera work is to be undertaken. The two pieces of Sony equipment

in use have proved ideally suited to the task and, being comparatively inexpensive, have increased the versatility of the equipment out of all proportion to their cost.

5) Mole Richardson Lamp, Type 410.0

The provision of adequate "safe lighting" was regarded as essential before any hangar work could be undertaken. The Mole Richardson Lamp conforms to Service requirements and has proved adequate for the task involved.

6) Shibaden VTR, Model SV700EC

7) Shibaden Portable Video Recording System, Model FP/SV707E

8) Sony Camera Model AV-3200CE

This camera is ideally suited to close-up work in confined spaces. It is fully compatible with the Sony Video Mixer and Special Effects Generator and enables the establishment of a 3-camera chain.

The CCTV Development Programme

The CCTV Development Programme to date has fallen into three distinct phases:

1) Phase I The aims of Phase I of the programme were:

a) To assess the capabilities of the CCTV equipment supplied to JAGUASS; to ascertain what, if any, additional facilities were required to determine areas in which the assistance of the Services Kinema Corporation Mobile Unit was required.

b) To establish a permanent base in which the CCTV equipment could be properly operated and validated and from which it could be controlled and deployed.

c) To supply formal and informal training in CCTV production and maintenance techniques to the CCTV personnel.

d) To ascertain the instructors' initial requirements for video tapes on the Jaguar aircraft as a whole, on components available at JAGUASS and on extracts from films or other temporarily available media.

e) To produce an initial batch of video tapes based on the requirements above, for use by JAGUASS instructors.

2) Phase II The aims of Phase II were:

a) To continue equipment familiarisation and out-of-doors trial utilising a helicopter as an airborne camera platform.

b) The procurement of additional equipment as required.

c) The production of a second batch of video tapes mainly on the production aircraft.

3) Phase III This phase has now been completed and video tapes have been produced on the following subjects:

a) Undercarriage.
b) Application of Ground Power.
c) Ejection Seat.
d) Battery Charges.
e) Refuelling.
f) Location of Avionic LRUs
g) Brake Parachute Change.
h) Flying Controls - Rigging pins.
i) Aircraft Walk-Around.
j) Flying Controls - operations.
k) Propulsion, Airframe and Electrical Before Flight and After Flight Servicing.
l) Operation of Test Set.
m) Weapon Loading Trials.
n) Engine Removal.

The video tapes, which deal with equipment familiarisation and servicing procedures, are mostly of short duration (from 5 to 10 minutes) and are custom built for a specific instructional requirement. In most cases video recording only is entailed as the video tape forms an integral part of an instructor's lesson presentation.

Now that Phase III is complete the aims of the next phase of the development programme are:

1) To collate and edit the video tapes produced during Phase III to meet the instructional requirement.

2) To assess the overall validity of the video tapes already produced.
3) To integrate suitable video tapes into instructors' lesson presentations when they become available.
4) To define the long-term requirement for video tapes and the estimation of the resources needed to meet this requirement.
5) To produce video tapes on seventeen other aspects of Jaguar aircraft servicing.

Conclusion

The initial reactions (the use of the term 'Feedback' would hardly be justified at this stage) of the instructors and students to the video tapes, all of which are now in use, have been extremely favourable. While it would be unwise to attempt to draw too many inferences from these reactions, the continued enthusiasm shown by the instructional staff and the absence of negative comment from students is most encouraging.

While every attempt must be made to make a report such as this as objective as possible, inevitably it must contain an element of subjective opinion. The accuracy of this opinion will only become known after the production and subsequent phases of the development programme have been completed. While the work done during Phase III would appear to have produced satisfactory results, the subsequent pahses involving the optimum development of resources, and methods of validation are of crucial importance.

LEARNING TO PLAY GOLF - A SIMULATION EXERCISE USING CCTV

Eric Blackadder
The Bayston Sports Equipment Ltd.

ABSTRACT

Centres or Organisations Involved

One

Date and Duration

One year's development 1972 to 1973

Population Target

Learners and those needing remedial instruction

Decision Maker for the use of CCTV

The Author and Consultant.

Evaluation

See final paragraph

A survey of the imaginative uses of CCTV in training and management may be incomplete without the inclusion of a case study detailing one very precise training function of CCTV: the self-identification of a trainee's motor skills and their modification by feedback information. This information was used to develop a specific training aid and the role of CCTV in this respect is commended.

A use of CCTV over several years has been to improve those aspects of human performance especially concerned with sports and leisure pursuits. At Loughborough, for example, a centre for auto instruction by audio visual methods uses video tapes to record the course on Anatomy and Physiology, and these together with a full range of illustrations from photographs, transparencies, cassettes and transmissions make available a wide range of material which would otherwise be difficult or impossible for frequent and convenient use when and where required. In Gymnastics, film and video tape are used for analysis and assessment purpose.

CCTV had also been used especially in two analytical and training roles at national level. One was that of a Rugby Union Referee's course. Here a group of referees was able to view a comparison of refereeing by a top grade referee and one less experienced. The CCTV exposure concentrated on their positioning to see the rules of the game, their movement around the pitch and their ability to oversee 360° of play. A further example concerned the Royal Life Saving Society who used Loughborough expertise to record a suitable organised [illegible]t and examination. This, in turn, was used to test examiners on [illegible]r own grasp of detail. The use of CCTV in circumstances such as these proved valuable in providing reference points for the development of individual training programmes based on self-assessment procedure.

One particular aspect with which the author was closely concerned involved the analysis of golfing techniques. The use of CCTV was experimental in the early stages and later led to the production of a specialist training aid. Preliminary trials were mounted as follows.

Long Range Instruction

The aim was to produce a video tape of golf under controlled circumstances where the performer-instructor would describe the circumstances of his play and the techniques of performance. A radio microphone relayed sound direct to tape and a camera mounted high used zoom to concentrate on detail. The player drove in from extreme range and completed the instruction close to camera using a trainee to demonstrate in close-up. Whilst the tape showed evidence of spontaneity, there did not appear to be any particular advantage over conventional instruction.

Self Analysis

A simple CCTV trolley: camera, monitor, video tape recorder and microphone, all mounted for maximum immediate mobility, was employed with a group of 17 year old initial trainees. They used practice 'Airflow' balls made of lattice-work plastic enabling indoor coaching to take place. The trainee used wooden clubs and irons to drive and chip

balls into a target area. Whilst he played from a fixed stance the trolley would be wheeled around him and a video tape prepared. He would view this after a period of two minutes' practice and by run-back he would attempt to assess why his best shots achieved the target. Hold frames on the video tape recorder helped in this analysis; but the quality of immediate feedback appeared to be lacking.

Aided Analysis

On the occasion of match play a team of experienced golfers representing their County each played from the tee under the surveillance of a camera linked to a video tape recorder. After each had completed his drive the taped results were personally discussed with the player by the club professional and some progress made in the isolation and correction of minor faults. The situation was superior to those so far described but did not appear to have created the involvement and feed-back suspected to be possible.

Paired Involvement

Still pursuing the possibility of improving techniques by post analysis of performance the following procedures were developed. Outside a large Sports Hall a miniature course involving four holes was laid out. From the balcony a CCTV camera taped the progress of a player over the whole layout. The learners were now placed into pairs and each instructed in the use of camera and video tape recorders. Thereafter, whilst one player worked the camera chain the other played the hole. They then reversed the roles. It was found that trainees became quite involved in their respective roles and because of this, playback of the tape in an analytical circumstance was more rewarding and informative.

However, each of the modes so far described involves taping and delayed feedback. On several occasions when players saw themselves live on monitors, especially from unaccustomed positions, the immediate feedback on peformance led to considerations as to how such procedure could be economically arranged. For the disposition of a CCTV chain, simple though it might be, was likely to be unnecessarily expensive for

circumstances where immediate, rather than delayed, feedback was required. To this end the function of the CCTV unit was duplicated by the development of a specialised training aid which owed its creation to the experimental work so far described.

The specialised aid evolved from the need to have an immediate feedback from the very first attempt by a beginner to move the club in a manner which would produce a sound swing, to be relied upon under emotional pressure.

The first situation used a set of photographs to show how to grip the golf club, the sequence being described by the tutor using a tape recorder. Because the handle could be placed alongside the photographs feedback was immediate and proved successful.

The taking up of the stance to hit the ball was more difficult and required the use of a mirror so that the comparison could occur. This now required that the photographs be printed in reverse so that they showed the reflected image of the learner which made comparison without first interpretation. While this too proved to be successful, an additional assistance was found to be necessary, i.e., marks on the floor to show the average distance of the separation of the feet and the distance of the club-hand from the feet when addressing the ball.

This movement of the club away from the place where the ball would be was first indicated by the placing of an object (in this case an empty tin) in the correct line so that when the club was moved correctly the tin would be struck by the club. This was soon replaced by a line so that the clubhead could be seen to move along the correct direction without having to replace the tin which was inevitably moved when successful.

Golf clubs are of standard length because of the anatomical fact that irrespective of the height of an individual the height of his hands from the floor is the same as that of others of different heights (there are exceptions of course). It follows that the distance of the clubhead from the feet will also be a standard distance but the arc through which the clubhead moves will be larger in the case of the

taller persons. Thus, an indication of the position of the clubhead following the movement away from the ball (the backswing) was required. The answer to this lay in the angling of the mirror. The beginner thus had to adjust the mirror first for his height before commencing to learn the movements if the feedback from the mirror was to be correct.

The mirror now had to be free-standing, which gave it an immediate advantage -portability.. The device could be set up anywhere where there was room to swing a club. The portable mat quickly followed.

The current kit, therefore, now comprises:-

1) A set of photographs showing what the learner should try to do.
2) A set of instructions printed alongside the photographs telling how the position shown in the photographs should be achieved.
3) A base mat and a mirror with lines, marks and reference numbers to show concurrance with or deviation from the desirable movements and positions which together make up the golf swing.

Additional items which may be used in conjunction with the "Swingbuilder" are a hitting mat which is placed on top of the main mat so that balls may be hit off from in front of the mirror, and a golf net into which the balls may be hit.

CCTV Chain as an Aids Development Unit

During the development of this training aid the substitution of a CCTV trolley with single or two camera aspect enabled experimentation and surmise to be tested effectively and immediately. Whilst it might indeed be a superior system to offer a CCTV survey of these training skills, the questions of cost and availability rule against such a solution.

It is seen, therefore, that the specific use of CCTV to develop superior alternative training aids can be effective. Imaginatively used; economies and motivation can obviously be achieved.

WEAPON TRAINING SCHEME
COMPUTER HANDLING
NURSE TRAINING

Lt. Col. J.M. Fricker
Major D.V. Clary
The Royal Army Educational Corps

These reports of skills training are separately documented in the Army paper.

THE USE OF CCTV IN ACCIDENT PREVENTION

There are two studies under this heading. Gay, of the National Coal Board, outlines the considerable effort extended in their endeavours to cut the accident and fatility rates. The operation of five mobile vans over a total of fifty pits, the employment of local miners and situations, the playback at locations and times when the miners are likely to be susceptible are all the hallmarks of sustained and imaginative procedures.

The Royal Navy gives considerable insight into alternative possibilities in their simulations of damage control under conditions of flood and fire. The use of low light response cameras appears to have been sufficiently successful for further investigation to proceed.

MOBILE CCTV UNITS USED IN MINE SAFETY CAMPAIGNS

K. Gay
Training Aids Section
National Coal Board

ABSTRACT

Centres or Organisations Involved

Approximately 180 collieries in Twelve Regions from which 50 pits at a time are selected.

Date and Duration

The scheme has evolved over eight years and runs for one or two weeks at each colliery.

Population Target

Miners, deputies and surface workers.

Decision Maker for the Use of CCTV

The National Coal Board

Evaluation

See paragraph 4 "Appraisal"

Five mobile CCTV units, operating regionally throughout the British coalfields, are used to present local television programmes at individual collieries at shift changeover time as part of the National Coal Board's continuous campaign for pit safety.

1. Background

The National Coal Board is constantly concerned with raising the standards of safety in British mines. To this end it employs a large range of techniques; the written word including competitions and safety quizzes with prizes, exhibitions, safety committees and inspections, annual safety themes, films (distributed in 16 mm gauge), film loops, and television. It organises twelve monthly campaigns in which fifty different collieries are each year selected for special attention. All this is in addition to technical effort in the field of accident prevention.

Closed circuit mobile television units play a valuable part in these annual (50-pit) campaigns. Five mobile CCTV units move from mine to mine in order to put onto television monitors a reflection of any particular mine's specific safety problem.

2. The Equipment

The units are largely vehicles mainly built on a Bedford chassis, which embrace a small INTERVIEW STUDIO capable of handling three or four people, with TWO REMOTE CONTROLLED CAMERAS and TWO VIDEO RECORDERS (using ½ inch tape) to cover the action. Programmes are transmitted on mobile 23" TELEVISION MONITORS, five of which (with linking cables) are carried on the mobile unit.

Back of those people interviewed in the studio is a screen which can present a photographic display or a magnetic display or can even be used for front projection by means of a slide projector which is included among the equipment, as well as a stills camera.

Next to the studio is the control room. From here the controller can operate remotely the cameras in the studio or an outside broadcast camera if required. He can control the sound output whether it comes from the studio or from outside, or on tape or disc. He also has a telecine facility so that he can use excerpts from existing film material to amplify or supplement the kind of programme he is presenting.

The rest of the vehicle is administrative space. Although nobody lives in one of these vehicles, enough space is available to make it possible to entertain interviewees and give them a cup of tea or coffee before they face the camera. In front of that, of course, is the driving area.

3. How the Units Operate

The National Coal Board's management structure is based on twelve geographical areas, most of which have between ten and twenty collieries, (though Scotland, Wales and North East have more) plus the Kent coalfield which has three collieries. The five mobile CCTV operate regionally and visit collieries in several areas. A mobile unit will visit a given colliery and plan perhaps a week there, perhaps two.

In the case of a one week visit the object of the exercise will be to produce, using local people whether they are mine-workers, trade union representatives or management, (and the better the mix the better) one or two at least 15 minute programmes outlining the safety problems at that particular mine and thrashing out suggestions for making improvements. Using some or all of the facilities outlined above, the programmes are put on video tape. One of the two Shibaden video recorders carried by each of the five mobile units has an edit facility so that the programmes need not be recorded in strict sequential order.

The safety programmes are transmitted from the vehicle to the television monitors. These are placed at strategic points at the colliery where men gather during shift changeover times. Because mining is a cyclic industry there is inevitably a period at the beginning of any given shift when men are waiting to be wound underground. This is the time to plug the safety message and the television screens are usually located at pit top, canteen baths (where men change into working clothes before going underground), lamphouse(where they collect their pit lamps and personal "self rescuer" equipment) and offices.

Mining is a twenty-four hour operation with men working on three round-the clock shifts starting at approximately 6,0 a.m., 2.0 p.m. and 10.0 p.m., so each programme is transmitted three times to the three different shifts. Video tape recording enables this to be done without difficulty.

The crewing of the mobile television units is a two person exercise. The controller is the captain of his own particular ship and is backed up by a girl interviewer, who acts as the anchor woman on the devising and presentation of whatever programme is appropriate.

The controller, however, works very closely with the particular colliery manager and his safety engineer and also, more often, with the National Coal Boards Area Safety Engineer, who will have responsibility for safety policy over a number of collieries. The controller devises programmes at the request of colliery management which cover safety subjects of particular local concern and brings his own creative ability to bear on these.

Girl interviewer and controller sit together as a team and in between producing programmes at specific collieries are responsible for leap-frogging ahead, making liaison with the new Areas and new mines, and planning the layout of their programmes some time in advance before they hit a specific mine.

Engagement and employment of television crews, the purchase and equipment of the units, and overall policy regarding their operation is arranged by Headquarters, the Chief Safety Engineer using the services and technical expertise of the Films Officer to implement safety policy.

4. Appraisal

Experience in all industries shows that it is impossible to isolate and measure the effect of any one particular technique in a series of techniques in altering behaviour patterns, and no attempt has been made by the Board to measure the effect of the mobile television vans as such in its safety campaigns, as this has been only one element in a concentrated approach using many techniques. However, it can be said that the 50-pit campaigns have, in the seven years that they have operated, shown a measureable improvement at the 50 collieries selected year by year for special attention and at which CCTV mobile vans have operated. The immediate effect has consistently been a reduction in accident severity rates, with the collieries involved averaging at least 10% improvement compared with the industry as a whole. In the long term few participating pits have ever returned to their former higher severity rates. In the U.K. as a whole there has been a decline over the years in the colliery accident rate per manshift worked. A chart showing international comparisons in fatal accident rates is attached.

The first mobile television unit began operating at British collieries in the autumn of 1966 and, so far as is known, the National Coal Board pioneered this technique. It has been adopted in the U.K. by British Rail in the form of mobile rail units.

CCTV was still comparatively new in the mid-nineteen sixties and some of the initial impact was gained by its novelty in the days before cheap portable video tape recorders began to appear on the market

(the units were launched using Ampex video tape recorders). Their hold has been maintained by the local relevance of the programmes transmitted so that, for example, a workman known to men at the pit can describe the accident in which he was involved and which may have led to the loss of a limb or some other injury. All programmes used local terminology, local speech and local names - not possible in nationally produced material designed for use in all parts of the U.K. (The appeal of this system of local CCTV programmes has begun to spread in the last year or so on a community basis in Canada and elsewhere and helps to explain the movement towards local cable television stations which has also developed.)

In the U.K. a national system of colour television public services broadcasting has led each year to an expanding number of domestic colour television receivers. In order to maintain the impact of the Board's mobile units it will probably therefore be necessary to change in the near future to colour programmes. This should help audience retention, always difficult when men are anxious to cut down waiting time and when car ownership means that the time of leaving or arriving at a colliery is not governed by bus schedules.

Work-safety, like liberty, is only achieved at the price of constant vigilance. The need for safety campaigning never ceases and it is anticipated that the CCTV mobile units will have to play a continuous role in the battle to reduce accidents and death.

SIMULATED DAMAGE CONTROL SITUATIONS INVOLVING FLOOD AND FIRE

Inst/Cdr. D.E. Cripps
Inst. L/ Cdr. T. Austin
RNSETT Portsmouth

ABSTRACT

Centres or Organisations Involved

One

Date and Duration

Commenced September 1970, trials continued until operational May 1974.
Each trial duration approximately 30 minutes plus de-brief.

Population Target

Officers and ratings from the Navy requiring instruction on the control of inflow of water due to damage to a ship's hull.

Decision Maker for the Use of CCTV

To hold trial: H.M.S. Phoenix
To implement results: Naval Home Command

Evaluation

Paragraphs 3 and 4

Introduction

1. A trial was arranged by RNSETT and held at the Damage Control section of HMS PHOENIX in September 1970. The problem was to assess and provide feedback to a team of trainees on their performance in controlling the inflow of water due to damage to a ship's hull. This training is carried out in a simulated ship's compartment, in the dark with only a single hand-held torch available. Leaks are simulated by forcing water under pressure through fissures in the 'hull'. The trainees do not know where or when the leaks will occur and must take action to minimise the water flow as soon as it occurs. Assessment and feedback were carried out by an instructor present in the chamber, trying to watch and remember how the teams acted in the dark, de-briefing them afterwards from memory immediately they had completed their exciting and stressful exercise.

Objectives of the Trial

2. To ascertain whether:

a) CCTV would be able to produce a clear and steady video signal under infra-red lighting conditions and in simulated Damage Control situations.

b) The de-brief would be more realistic and worthwhile for the students by using CCTV.

c) CCTV would provide any side benefits, e.g. saving in staff.

d) CCTV would provide a stricter control over the exercise.

e) A ½" tape system would provide a better picture and more practical solution than 1" tape, by using a mobile camera pack inside the compartment.

3. The trial established the following points:

a) The equipment provided for the trial gave a steady, though hazy picture under two infra-red filters but sufficiently clear for the action of the students to be monitored and analysed. It was agreed that the haziness would be reduced by an additional four infra-red filters and high definition, wide-angled lens, which would improve picture definition. Consequently, this lighting has been fitted.

b) A 'ghosting' of student movement, which is caused by image persistence, is evident, and this is unavoidable using vidicon tubes and working in semi-darkness.

c) The camera was held outside the compartment in the viewing gallery and the shots taken through the observation window. Operationally, fully waterproofed cameras have been located insided the demonstration area in fixed positions. More than one camera is required to give adequate coverage.

d) Staff and students alike agree that the de-brief is much more authentic and students are now able to be self-critical. Invaluable back-up material is also immediately available to the instructor.

e) A saving in staff did not ensue, but staff are kept out of the chamber and employed in the Control Room, operating the equipment.

f) The organising officer can control each sequence more efficiently since he is able to assess each situation concurrently using four 9" monitors.

g) Situations can be taped as they develop by cutting in the appropriate camera shot and automatically moving onto the shot for detail by controlling the camera remotely from the Control Room. This ensures that the de-brief tape only contains the relevant material.

h) The de-brief itself is more effectively controlled since immediate playback is available.

4. The trial with the ½" portable system was not pursued since, although practical and cheaper, it would involve two major disadvantages:

a) The exercise de-brief would be difficult to run, as the information required would be on two VTRs, one from the fixed RT 100 cameras and the other from the ½" portable equipment. The tapes would have to be edited to provide one worthwhile tape and this would take time, which is not acceptable. To run a de-brief with two separate tapes is difficult and after a few months there is a danger that only one may be used in the time available.

b) The mobile cameraman would be out of communication with control, and, although an experienced member of staff, would inevitably get in the way as he concentrated on his camera shot.

5. Consequent on the above, a bid for portable equipment was not supported even though it would have the advantage of being used for location work outside the compartment. This equipment would have had to be water-proofed bringing the cost from £670 to £870.

6. The installation of a separate VTR in a class room for the de-brief was considered important. VTRs are sensitive items of equipment and, whilst the makers state that they can be lifted by hand, it is undesirable to do so unnecessarily. Thus one VTR will remain permanently in the Control Room. Final acceptance trials of the installed equipment are now taking place and the entire Unit will be operating by June 1974.

SALES TRAINING AND PROMOTION

Customer Training by Cassette	Waterbury, Farrel
Coca-Cola Training Scheme	Coca-Cola
Hewlett Packard Training Scheme	Packard
IBM Training Scheme: World Wide Distribution	IBM
A Cassette Network with Language Complexity	F.M.C. Corporation
A Cassette Product Selling Scheme	Ford Motor Company

Whittington of the "Insight" reporting team gives narrative accounts of each of these schemes seen from the context of the U.S.A. and it is not, therefore, appropriate to extract the quoted figures since the information is not at first hand. The references are included because they are of outstanding interest at this time.

CCTV AT THE JOINT SERVICES MEDICAL REHABILITATION UNIT ROYAL AIR FORCE CHESSINGTON

F/Lt. K. Clarke
R.A.F. Upwood

ABSTRACT

Centres or Organisations Involved

One

Date and Duration

One year's account

Population Target

72 patients with head injuries

Decision Maker for the Use of CCTV

Joint Services Medical Rehabilitation Unit

Evaluation

See paragraph on 'Conclusions'

A requirement existed at the Joint Services Medical Rehabilitation Unit (JSMRU) for a convenient method of making visual record of progress in more severely disabled patients. In particular many patients with head injuries have difficulty in co-ordination and walking, and a moving record of their problems is essential for proper analysis and successful treatment.

Introduction

In the past cine photography and still photography have been used in an attempt to provide a visual record of the progress of patients with severe head injuries. Both of these types of photography suffer from a prolonged progressing period during which time there may have been many changes or improvement in the patient's condition. It was therefore considered that CCTV would provide immediate, moving functional records that might be of even greater value. Present knowledge suggests that JSMRU leads the field in their use of CCTV in this way.

Equipment

The CCTV equipment used at JSMRU is as follows:

(1) Shibaden Camera, Model FP 100A

(2) Shibaden VTR, Model SV700EC

(3) Decca 21" Monitor.

All the equipment has had a good serviceability record in the two years (approximately) that it has been operating. However lack of user training creates problems, particularly in the setting up of the Shibaden camera, and the picture quality on some tapes is well below the quality of which the equipment is capable.

Applications

Serial recordings of the functional ability of patients with head injuries or cerebrovascular lesions are made to provide a more accurate method of assessing progress. In turn these recordings are useful in assessing progress and the reaction to various forms of treatment and also as an assessment of how staff apply such treatments.

Many patients in this group have speech and communication problems and are unable to express themselves or their emotions in the normal way. Serial video recordings offer therapists a more realistic method of assessing progress in this type of patient. They also assist the therapist in boosting the patient about his own progress - a most important advantage on the sometimes long road to recovery. In the past year 72 patients have been treated in this way. Of those ten had suffered strokes and 62 had head injuries. Of the latter five had gunshot wounds in the head and the remainder were mainly road accident casualities.

Possible Future Applications

Conventional medical still photography has been used with success for some years in recording the effects of head injuries and response to treatment. A logical extention of this is the use of CCTV equipment to make a functional recording. Patients with injuries to the lower limbs and with abnormality of gait might respond better to walking re-education programmes including video tape equipment, where the instant playback facility could be exploited to the full. In addition to the above, the functional records obtained during the patient's rehabilitation will provide a useful source of 'captive' clinical material for the use in

training of remedial gymnasts and in the continuation training of all therapists.

Conclusions

The initial reaction of the users of this system at JSTRU is one of extreme enthusiasm. These are dedicated people and their wish to help their patients as much as possible is very strong. Given an increase in the range of equipment available to them they foresee many advantages continuing from the present use and many other advantages, as yet untapped, from the possible future applications.

MICROSCOPY AT R.A.F. HALTON

F/Lt. K. Clarke
R.A.F. Upwood

ABSTRACT

Centres or Organisations Involved

One

Date and Duration

On going research and development

Population Target

Groups of 30 technicians and pathologists under training.

Decision Maker for the Use of CCTV

The Institute of Pathology and Tropical Medicine

Evaluation

See 'Conclusion'

The microscope is a standard tool in medicine. It is essentially a personal tool in that only one man can look down it at any one time. This presents problems and difficulties in the training of pathologists and laboratory technicians. CCTV appeared to be the obvious solution to the training problem because the amount of light entering the microscope field can be multiplied electronically to obtain a bright picture for viewing by a large audience.

Introduction

The problems of one man, one microscope, has been overcome in the past by use of either double headed eyepieces or microprojection. Double headed eyepieces are expensive and permit only two persons to look down the same microscope for training purposes. They also cut down the light available by half as the images have to be split between the two observers. They are excellent for intermittent individual training, but useless for class purposes.

Microprojection, theoretically, allows class participation. All microprojectors, however, are dependent on having sufficient illumination to pass through a lens system with the apertures of 1 - 2 mm and yet provide a bright enough picture for projection. Microprojectors work satisfactorily at low magnification such as are used in elementary botany and biology, but at higher magnification (600x to 100x) used in medicine they fail even under conditions of absolute blackout and they have a very narrow viewing angle. At the Institute of Pathology and Tropical Medicine (IPTM) it was considered that in order to train pathologists and laboratory technicians in classes of up to thirty, CCTV was the obvious solution. Because coloured stains are essential for teaching purposes a colour CCTV system was used.

Equipment

The equipment used at IPTM is Gillet and Sibert Conference Research microscope with an IVC colour camera complete with PAN encoder. The Microscope is equipped with constant focus binocular head, two x 10 eye-pieces, variable neutral density filter, television colour optics and splitterhead. The complete microscope with colour camera is assembled and optically aligned on a large rigid base. A 25 inch colour monitor is supplied to accept a PAL input circuit.

Applications

The main areas in which the CCTV is used at IPTM are:

(1) Training of Pathologists
(2) Initial training of laboratory technicians
(3) Continuation training of medical officers, e.g. clinoco-pathological demonstrations
(4) Medical meetings and conferences.

The specific medical uses of the equipment are the examination and recognition of cells of microscopic size in haematology and histology.

There is also an inter-departmental clinical use, e.g. where pathologists require to discuss a tumour.

The CCTV is used to teach, demonstrate, examine, differentiate, assess and count anything which is normally viewed under the microscope. Its application is significant in that it has the unique advantage that a whole class can be taught at the same time on the same

preparation which can be moved around and increased or reduced in size by altering the magnification to demonstrate particular aspects. All persons within viewing angle of 90° receive a very good picture and a class of about thirty can be taught at one time yet all remain sufficiently close to pick up detail. The resolution and colour at every magnification is very good and reproduces quite faithfully an actual microscope image. In some instances, such as demonstrating blood films nucleoli in individual cells from leukaemic patients, the CCTV is superior to the plain microscope as it is possible to vary colour tone and contrast to suit the material.

Conclusion

The users of this equipment consider it to be most worthwhile in that it reduces, by a very large factor, the time taken to train a class of thirty students in microscopy.

From the student's point of view, given that the equipment is set up correctly, it is reported that the haematology and histology lessons are a great success.

UPDATING 16 MM TRAINING FILMS

Inst/Cdr. D.E. Cripps
Inst. L/Cdr. T. Austin

ABSTRACT

Centres or Organisations Involved

One

Date and Duration

Two weeks preparation. Four months evaluation.

Population Target

Ratings of Operations Room Branch up to Petty Officer.

Decision Maker for the Use of CCTV

To hold trial: H.M.S. Dryad

To implement result: Ministry of Defence

Evaluation

Not quantifiable but see 'Conclusion'

Introduction

1. It has long been recognised that a 16 mm film has usually only limited life depending on the material filmed. This is particularly critical for films about equipment or systems which are modified or replaced as improvements develop. With the ever present need to exercise economy, the Royal Navy has recently been experimenting with video cassette players as a possible way of updating 16 mm films for training.

The Trial

2. The subject chosen for a trial was a colour film in three parts concerning the computer system fitted into the fixed-wing aircraft carriers. The original system is now being superseded by more sophisticated and versatile one and, at the same time, because of the changing role of the Fleet Air Arm away from fixed-wing flying, the whole slant of the original film was changed. The problem facing an instructor was whether to use the film and indicate to his class the parts which no longer applied or to ignore the film and make do with flo-diagrams, etc. Generally speaking, that film was not used.

3. It was therefore decided, since the cost of remaking this film would be between £10,000 and £15,000, to attempt to edit the usable parts into video cassette, thus retaining the colour which is considered to be important particularly as the computer console switches are colour coded. Almost all the remaining film is in animation and the editing proved generally successful.

Problems Encountered

4. a) The quality of the video tape reproduction is directly affected by the quality of the 16mm film copy used.

b) The standard of the caption sizes in film production are not as clearly defined as those in television. (The R.N. recommend that, generally speaking, caption type should be about 1/10th the height to be scanned, 1/15th being the minimum. This enables a student to read a TV caption from a 23" screen at a distance of 12 feet.)

c) The aspect ratio (height by width) of a frame of 16mm film is not exactly 3 x 4 as in TV resulting in either not all the information showing on the screen or a gap at the top and bottom having to be accepted as the alternative.

d) Where large parts of the original were edited out there remains an awkward 'jump' in continuity. This has been used to effect since the instructor stops the cassette at these points and injects class discussion.

Insertion of 'Live' TV Filming

5. Since another role for the cassetted version was to use it as an introduction to this particular computer system, there was a requirement to show the new console. As no colour cameras were available, the new system was filmed in monochrome using a ½" two-camera chain and selected shots edited into the coloured video tape made from the original film.

Conclusion

6. Three courses have now experienced the cassetted film and this has enabled about 3 hours instruction time to be saved on this module of the course. It is intended to re-shoot the 'live' inserts in colour during the latter half of 1974 in an attempt to identify how or why the colour coded switches affect the ability of the student to understand the system. For the time being, a coloured diagram is used to show this coding.

THE USES OF CCTV IN TRAINING IN THE BRITISH ARMY

Lt/Col J.M. Fricker, R.A.E.C.
Major D. W. Clary, R.A.E.C.

(The Army paper stands as a complete report and embraces case studies within it. The over-all emphasis has been on the cost-effective case of CCTV and the up-dating of instructional procedures in the Army.
John Leedham - Editor)

Beginnings

The decision was taken in early 1968 to examine the possible uses of closed circuit television (CCTV) in Army training.

There was at that time little evidence that the employment of CCTV would necessarily increase the effectiveness of training, and even less evidence that investment in the medium would prove cost-effective, so that the decision to develop a CCTV capability was to some extent a declaration of faith.

This declaration was not, however, without grounds. There was already a powerful movement based on the principles and practices of programmed learning, towards a fundamental re-examination of the content and presentation of Army training, and this movement - which developed into instructional technology - demanded among other things that the fullest possible consideration be given to the use of technical advances such as television, in the educational and training spheres. So there was already a climate generally favourable to change and experiment in which the possible uses of CCTV could be defined and assessed. Moreover, commonsense suggested that there must be suitable uses for the medium in the instructional environment: off-air television had demonstrated the impact of the TV-camera in focusing attention, magnifying detail and transmitting information vividly and precisely, and there was every reason to suppose that these qualities could assist learning in a military context.

The Army Department recognised that the problem of how CCTV could be used cost-effectively in training demanded attack on a broad front and it was therefore decided that, while there should be some form of centralised CCTV facility, there should also be the opportunity for experimentation at unit level. Both equipment and organisation had to

cater for this and it was concluded that a central studio was necessary, supported by a CCTV mobile van and a pool of equipment for loan to units, with the whole tasked and co-ordinated by an Army Department Committee.

Equipment

By the then prevailing standards the Army's initial investment in equipment was high. Basic studio equipment cost £17,000 and the cost of obtaining, converting and equipping a van for use as a mobile CCTV unit added a further £8,000. To this had to be added the cost of 8 Ampex 7003 Video Tape Recorders (VTRs) and 14 monitors for the pool of equipment. The control room of the central studio was designed by Rediffusion and contained vision mixing and audio mixing units, remotely controlled telecine equipment, monitors, audio and video tape recorders, a gramophone turntable and a distribution system. The signal could be distributed by cable over a distance of 200 yards to 18 reception points, each of which could dial 6 channels to receive sound and vision. The telecine equipment comprised a Marconi bench fitted with a non-viewfinder camera, a 16mm projector, a 35mm slide projector and a caption scanner. The studio itself had 2 Marconi vidicon cameras on dollies with viewfinders and talk-back, while 4 x 2-KW spots and 4 floodlights suspended from the ceiling provided the lighting.

The mobile van was equipped to work 2 plumbicon cameras up to 200 yards from the van which was in turn able to operate 200 yards from a power supply. In the van was a miniature control room operating an Ampex 7003 VTR. All three Services decided at the time to purchase the Ampex 7003 video tape-recorder since it was the cheapest compatible VTR available and if all used it the exchange of tapes would be possible.

Since the first purchase in 1968 equipment has changed significantly in terms of price, ease of operation and capability. Generally speaking, equipment has become relatively cheaper and much easier to operate, while the advent of the hand-held, battery operated, portable camera systems has added a new dimension to the versatility of the medium. It is now possible to obtain a simple chain of hand-held equipment for less than £1,000 and the market is being penetrated by colour equipment, video cassette recorders (VCRs) and a range of good quality, low-cost VTRs.

The equipment currently held by the Army ranges from the editing highband Ampex 7900 (installed in the new Services Kinema Corporation Bosch Mobile CCTV van) and the editing Ampex 7800 and colour Ampex 7003H VTRs (at the Army school of Instructional Technology), to the Shibaden and Sony ½" VTRs and hand-held equipment available for loan and trials at unit level. In general terms the newer equipment has contributed substantially to the cost-effectiveness of CCTV in training.

First Thoughts

While CCTV equipment was being produced and installed a survey was made of the relevant literature available, and the experiences of existing CCTV users were studied. Research findings from the United States of America were encouraging: in summary these suggested that university students could learn as well from television as from conventional instruction, even though initially at least they expressed a preference for the live instructor. Further the findings indicated that less able school children could obtain better results from televised material. The American Armed Services were using CCTV extensively and although their training environments and training problems differed in scale and content from those of the British Army they nevertheless added additional weight to the view that the selected use of CCTV could increase training effectiveness.

In Britain there was little published research to provide guidelines for the use of television in training, but a study of the experience of organisations already employing CCTV proved of benefit in disclosing techniques, problems and ideas. It was particularly noticeable in the larger CCTV studios of some unitersities that a gulf had developed between the "academic" and the "TV technician" which resulted in less use being made of the medium than might otherwise have been the case. The Army quickly learned the lesson that for the realisation of optimal learning and cost-effectiveness, control of the CCTV system had to be in the hands of the trainers and educators who needed to direct, produce and present TV material.

Against this background it was concluded that the identification of cost-beneficial uses of CCTV would have to proceed on a pragmatic, experimental basis with all possible applications of CCTV to training

being explored through trials. It was considered that those trials, which initially might take the form of a paper-exercise only, would indicate where further in-depth studies were necessary, disclose areas where CCTV could be implemented at once, suggest areas where the medium might prove cost-effectiveness, and lead to the accumulation of knowledge and technical expertise.

Trial Areas

Initially three main areas were agreed in which trials might take place. These were chosen on common-sense grounds relating to the visual possibilities of television and to the clear indications available from the training establishments that the medium would prove effective and efficient if applied. The areas concerned were:

(a) Demonstrations, Presentations and Playlets.

(b) Immediacy.

(c) Group-paced Instruction.

These provided the essential criteria for deciding whether trials were justifiable and whether equipment should be issued to units although it was quickly recognised that in addition to these primary considerations there were further factors specific to units and circumstances which would greatly affect trial design success. Among these factors were staff and student attitudes, the technical abilities of CCTV users, and the way in which the medium was accommodated in the total organisational and training environment.

In the event trials were normally satisfactorily completed: even technically poor quality CCTV material appeared to teach effectively, while users' efforts were maintained at a high level by the ever present threat that equipment would be withdrawn and used elsewhere if optimal use were not made of it for the agreed purpose.

Demonstrations, Presentations and Playlets

It was apparent from the outset that savings could accrue from the recording on video-tape of many demonstrations, presentations and playlets which form a significant part of Army training with a view to their re-play on a number of succeeding occasions. What was not apparent was the extent of the probable savings or the degree to which the

Army would accept the use of video-tapes as a substitute for live demonstrations.

A series of trials was held in which the costs of producing acceptable quality video-tapes of a particular demonstration were carefully compared with the cost of the real thing. These demonstrations were frequently sufficiently large in scale to demand a high investment of manpower, time, and such physical resources as vehicles, ammunition and weapon systems, and where they were held in large training school to the demonstration zone. Major demonstrations and presentations usually demand rehearsals and this added substantially to final costs.

The trials took account of equipment depreciation, current costs, rates of pay of the military and civilian staff concerned, software costs and the loss of interest - assessed at 7% - on the capital sums involved.

The costing techniques were deliberately kept simple but were sufficient to prove in mid-1969 that in a typical medium-scale demonstration in which 12 Service personnel took part the use of video-tapes was not only effective in training terms but also in financial terms, since the costs of production were covered after four showings. Any additional showing after the fourth resulted in savings.

With the improvement of CCTV equipment, particularly its ease of handling and its compatability at lower prices, the general costing situation has operated in favour of the video-taped versions. In the case, for example, of a Training Centre which requires 7 Sony $\frac{1}{2}$" VTRs and monitors to make four demonstrations to student syndicates, the TV costs are more than covered by the cancellation of just one live demonstration on one occasion.

These early studies demonstrated the cost-effectiveness of CCTV as a substitute for live demonstrations and presentations of various sorts, but they also showed up some other interesting advantages resulting from the use of the television medium. Instructional staff quickly saw that the camera focussed attention on critical points in a way that normal vision could not; further the camera was able to magnify detail, and it ensured that all students went through precisely similar learning experiences. CCTV, like programmed learning, was leading to standardised instruction.

There were indications, too, that the use of CCTV could actually reduce training time, and in a period when weapon and equipment systems were daily becoming more complex to operate and maintain such reductions were welcome. Where they were achieved it was possible to include more material in a given course and so produce more skilled or versatile trainee outputs.

Video tapes are now extensively used in place of major demonstrations. They have proved most cost-effective where large numbers of people are involved in rehearsal and performance, where there is frequent rehearsal and regular repetition of the demonstration, and where weapons, vehicles and student travel are involved. In one case the use of CCTV in this way has saved 1,130 man hours, 80 hours of vehicle time and 35 hours of civilian coach hire. In another, savings of £3,000 annually have resulted from the replacement of a live demonstration by taped material. Subjects recorded have ranged from major displays of, for example, infantry fire-power, through operational drills (e.g. road-block procedure), to equipment-based, lecture-type presentations. In the latter case the use of video tapes has enhanced the display of miniature circuitry, metal micro-structures and aspects of crystalography as well as obviating the need continually to set up and dismount complex scientific demonstrations. A by-product has been the case of timetabling resulting from the availability on tape of a whole range of demonstrations and experiments: a major scientific experiment can now be taken off the shelf like a book and slotted into a course as required.

These advantages are obtained at the expense of some loss of atmosphere and realism in certain training situations.

Immediacy

A most powerful characteristic of CCTV is its immediacy. A trainee is able to receive immediate feedback on his performance by watching a monitor on which his actions and their results are shown together. He can adjust his actions on the basis of this visual feedback to achieve a desired outcome. This aspect of immediacy has proved particularly valuable in the training of missile operators where it has

led to a 15% increase in hit-rates in training environments. In such learning the cost of CCTV equipment and video tapes is minimal in comparison with the costs of weapon-systems, and television is then patently cost-effective. Equally a trainee can receive delayed feedback by watching a video tape of his performance seen after its completion. Subsequent viewing of his performance, usually with an instructor, allows him to identify his faults and remedy them at an early stage in instruction. It has been proved that trainee instructors, plant operators, conductors of bands, cavalrymen learning to ride and weapon handlers learn more quickly if they are provided with early feedback on their faults. This ability to receive visual confirmation of performance is clearly invaluable.

There are of course problems: for example, it is difficult to determine whether instructor training using CCTV is cost-effective or whether an entire instructional period should be recorded, or merely a part of it. The physical process of playing a video recording takes time, and it is arguable that trainees should view the screen in their own time, even if an instructor is not then available to advise and correct. It may well be necessary in the case of instructor training to apply the techniques of micro-teaching now being developed elsewhere, while further experimentation may be needed before even tentative answers can be given to problems of integrating CCTV used in this way into existing training situations.

One thing is clear, the immediacy of television playback is a major aid to learning and to communication between instructor and student. The Army has accepted this, and uses CCTV in this way to prepare Servicemen to appearance on national television networks, to train bandmasters, to teach interviewers basic techniques and prepare them for employment in selection and personnel fields, and to train a range of equipment and weapon operators. CCTV is used in a similar way to train assessors who use video recordings as the basis for identifying and agreeing criteria and developing techniques of standardisation.

The Army Recruiters course is now CCTV-based, it uses videotaped demonstrations of "how to do it", immediate replay to highlight interviewer performance, and delayed replay to allow considered assessment of students. Directing staff time is saved and student interest

is maintained at a high level. A better student product is claimed, although this is difficult to prove. What is undeniable is the increased attention given to course design as a result of introducing CCTV.

Group-Paced Instruction

The employment of CCTV in the broad area of group-paced instruction implies that TV can be used as the prime means of transmitting knowledge, attitudes and skills to learners. Research in the United States, quoted earlier, demonstrated that, used in this manner, CCTV was indeed an effective instructional instrument, and trials in the British Army, although limited in number and scope, fully support the American findings.

In general terms, experience has shown that in some training situations it is possible to replace the live instructor by video-taped material, or at least to replace the expert by a less qualified instructor using video tapes, and in certain limited circumstances the savings accruing from this approach have been substantial. But more obviously the use of CCTV as a "prime teacher" has allowed expertise to be more widely spread and instruction to be standardised to a high level of competence. CCTV instruction, because it is based on careful analysis of what needs to be taught and how, has frequently saved course time, thus freeing instructors to devote more time to individual students and so enabling training objectives more easily to be achieved. While any suggestion that CCTV can replace an instructor almost invariably engenders hostile attitudes, it remains a fact (as the following examples show) that the selective uses of television as a "teaching machine" can be wholly beneficial in training establishments, particularly where there is shortage of instructors or instructional expertise.

An early experiment in this field involved "follow-me"types of instruction in the weapon training context. After conventional classroom instruction recruits are tested in the stripping and assembling of a machine gun and in factual knowledge of weapon capabilities and characteristics. This conventional instruction was video-taped in studio conditions, with careful lighting, paced delivery, emphasis on critical points through zoom techniques and magnification, and the use

of captions. It was also video-taped in the classroom using the more limited facilities of the CCTV Mobile van. Both video-taped versions were then used with similar groups of recruits who received their instruction through 23" monitors instead of from a live instructor. Testing showed that there was no significant difference in the performance standards achieved by recruits trained by CCTV and those trained conventionally, although there was some slight indication that the studio group performed better than the mobile group. But in the case of actual knowledge the TV studio group achieved significantly better results, probably because of the structured nature of the tape and the use of captions.

This result encouraged further investigations and in a subsequent trial CCTV was used to replace an instructor in the early days of training in computer handling. The instructor was relieved of the need to guide a student at the computer console when repetitive skills were being learned and was freed to act instead as tutor to larger groups.

A third trial, in the nurse training sphere proved equally successful. Student nurses conventionally received instruction on a particular disease by means of a formal lecture followed by case-study in the wards. The difficulties are obvious: instructor expertise and experience differ widely, and the situation will frequently occur when no suitable patients are available. CCTV was employed in two related but separate ways to tackle this problem. On the one hand, video tapes were made of lectures by specialists who used a real patient as the basis for the exposition and who spoke spontaneously and unrehearsed. On the other, tapes were prepared of scripted lessons which had built into them queries on diagnosis and treatment which the students had to answer. These tapes required considerable preparation and were difficult to arrange. Replies from student questionnaires indicated that the first type of tape was as good a teacher as conventional instruction, while the second type was significantly better.

The use of video tapes in this mode has several proven advantages. The development of a library of tapes means that the sister-tutor in charge of nurse training is able to provide instruction exactly

when it is needed and not simply when the specialists (or the patients) are available. Specialists' time is saved and the material is available at any time for revisionary purposes. Above all the video tapes provide those learning features essential in this area of training: magnification of detail, focussing of attention and standardised instruction.

A further use of CCTV in the group-paced instructional situation is the presentation on tape of formal, highly structured lessons in which an expert develops his argument with the support of a range of visual aids including diagrams, still photographs, 16mm film, slides, models and captions. The preparation of such lessons is very consuming of time and manpower, and its presentation on video tape is amply justified. This method has proved cost-effective, particularly as equipment costs have been lowered.

Extension of CCTV Provision

The trials outlined in the preceding sections demonstrated to the Army at large that CCTV was both effective and, used selectively, an efficient training medium. There followed a rapid extension of the facility in the UK-based training organisation and today over 40 establishments hold CCTV equipment of some kind. As cheaper forms of equipment come on to the market offering both quality and compatability further expansion is planned. Present British Army policy provides for a central studio and mobile van to produce the sophisticated edited video tapes, transfer them to $\frac{1}{2}$" tapes and distribute them to training centres where they are shown on $\frac{1}{2}$" VTRs, although a few establishments still retain the 1" Ampex VTRs issued in the late 1960's. An increasing number of units also have hand-held, battery-operated cameras. Very few establishments require a full studio facility, for this is expensive to run and maintain and necessitates the employment of trained operators and technicians, and in any case most requirements can be covered by the central studio and the mobile van.

Development Problems

The application of CCTV in training has not been without problems. Many of the difficulties encountered have reflected the

natural human attitude of resistance to change, and CCTV has had in many cases to overcome suspicion and doubt. The problems of innovation are well known, and the development of television in instructional situations has in many respects exemplified these.

A proportion of instructors have expressed unwillingness to experiment with the medium and dislike at seeing themselves on television. They object to other instructors being able to use "them" and "their" teaching at will, and they dislike exposure to criticism. Some of them object to the extra work which participation in CCTV instruction entails, and others simply oppose change. Such unfavourable attitudes can prejudice the proper conduct of trials and in extreme cases can lead to the rejection of the medium. Great care has always to be taken to win the support of instructors on the ground before CCTV (or any other new method or medium) can be successfully applied.

The production of TV programmes involves preparation and practice and imposes a substantial work-load on instructors whose timetables are often already full. Enthusiasm and good management are essential if the initial effort is to be forthcoming from instructors in such circumstances. The problem is accentuated if, as was often the case with early equipment, first results were technically disappointing. The older range of 1" VTRs, for example, was difficult to handle, and compatability problems were not unusual so that poor picture quality was frequent. Even staunch CCTV supporters lost some confidence when showing a less than excellent video-recording or live picture to an influential audience.

Sophisticated and complex-looking equipment produced a further problem. Some instructors were reluctant to become involved for fear of not being able to operate it, and indeed wherever complex equipment was taken into an organisation there followed a requirement for specialist staff to operate, maintain, and control it. The specialists were not always available.

These main areas of difficulty have very largely been overcome. Conscious efforts have been made to develop attitudes favourable to CCTV in the "managers" of training, and the advantages and potential of the medium have been widely disseminated at all levels. Instructors have wherever possible been drawn into a working partnership with CCTV so that

they have developed early on a feeling of responsibility for its successful use in training. The advent of generally reliable, easily handled, small equipment has aided the process of acceptance, as has the enthusiasm of those who set out to "sell" the use of CCTV in training.

Recent Developments

The Army is continuing its studies in order to evaluate more recent developments. In particular trials are being conducted in the transfer of video taped material to film, the use of colour in television, the uses of video cassette recorders, and the operation and use of hand-held, battery-operated cameras.

Studies of the transfer of 1" video-taped material made on an Ampex 7003 or Ampex 7900 to film are important since all units have 16 mm film projectors but only a few have VTRs. It has been shown that video-taped material can be transferred to film at a rough cost of £5 per minute (for a master film and one copy), while the transfer from a video tape to a film of an Infantry Platoon Weapons Fire Power Demonstration, taking full account of material and manpower charges, would cost about £45 per minute compared with up to £280 per minute required for a black and white film on the same subject if a professional contractor were to be used. Colour video tape can be transferred at a cost of £10 a minute. The transferred product is not able to stand technical comparison with a professionally produced film, but it is of a quality acceptable for training purposes and has the great advantage of lower cost and of being more quickly made.

The possible use of colour has been considered for a long time but there has been no great demand for it since American research suggested that it contributed very little if at all to more effective learning. It is possible, however, that with sufficiently accurate colour quality there could be an application in the medical field. A further point is that the manufacturers and producers of CCTV equipment and materials are increasingly concentrating on colour productions at the expense of black and white and the availability factor is influencing the market and so may affect future developments in training. Already the lowest priced video cassette recorder and colour set cost very little more than a ½" VTR and monitor and it does seem likely that the former will come into much wider use.

Video cassette recorders (VCRs) seem versatile and economically viable. They appear easy to handle and compare well with the present range of VTRs. Hand-held cameras, easily portable and powered by batteries, can be used after a minimum of instruction by any amateur and their arrival is changing the whole concept of CCTV from one based on expensive, sophisticated equipment demanding careful planning to one based on the opportunity-use of light equipment in a widening range of situations. In the Army, for example, hand-held cameras allow a patrol to be filmed under simulated operational conditions, so that patrol members can learn of their performance from the playback. Many similar uses can be envisaged, from the training of recruits to the operation of demolition experts.

Present and Future

CCTV is now widely employed in training. Bandmasters, bomb disposal technicians, officer cadets, missile operators, nurses, recruits, Army Recruiters, trainee instructors, interviewers and interviewees, lecturers and students, all benefit from the use of television. CCTV can greatly assist medical training, and it seems possible that it will have a unique application in psychiatry. It is likely to be used in recognition training and in equipment handling roles, and it can be used to bring realism into the classroom. It is used in oral training, for reconnaissance and briefings, and for sports coaching.

Provided its use can be shown to be cost-effective there is reason to suppose that the application of CCTV to training will spread. Properly integrated into systems engineered courses of instruction it can help to produce optimum learning conditions by employing its unique qualities of immediacy and playback. Vision is a powerful and acquisitive sense, and television uses it to the full.

In the British Army CCTV has developed within the framework of instructional technology where emphasis is placed on the systematic design, implementation and validation of training. Within this framework it has proved an effective medium of instruction and in a period of limited manpower, complex material systems and steeply rising costs it has gone some way to increase the cost-effectiveness of training. It is a most valuable weapon in the armoury of instructional technology and its continuing use and development seem assured.

DISTRIBUTION NETWORKS U.S.A. AND GREAT BRITAIN

Richard Whittington
Insight

The reporting team 'Insight' were asked to prepare a study to refer especially to the use of cassette systems and to cover some detail of the U.S.A. scene. The cases they quote from the U.S.A. are generally known to exist, but the detail of their world-wide ramification is illuminating. So far as Great Britain is concerned the quoted cases trace the beginnings of a cassetted training system which is likely to spread rapidly because of the simplicity of preparation and replay. The examples which Whittington quotes are scarcely case studies in their own right. The aim of this study was to provide a comparative backcloth of recent history in the CCTV field over a wider-than-Britain stage. This it does most usefully. The separated and detailed account by Rol Stafford of how B.P. disseminated information on a speedily arranged cassette network gives considerable substance to the optimistic forecasts made about cassettes in this contribution.

Distribution Systems

Training - particularly management training - is an expensive business. For many years films have been used by company trainers as a basis for making the teaching and learning a more interesting and more effective process. Films, while a major step forward from traditional information presentations, have their limitations. They are expensive, cannot be updated, and must be shown in the cinema environment to achieve a maximum effectiveness. Unless carefully integrated into multi-media package their effectiveness can be destroyed altogether. Instead of activating a learning process they can become more entertainment.

During the last three years companies have started discovering the permutations offered by video tape systems. Although CCTV has been with us for much longer, it is only since the comparatively recent development of video cassette players and cheap cameras that its use has really exploded. The video cassette offers the trainer several unique opportunities. Depending on the playback system he is using he may buy pre-recorded cassettes (for example Trans Media Video Arts, E.M.I. and Bothon all now offer training titles from their management series

in either Philips VCR or Sony U-Matic formats) or he may record material from broadcast off the air. He may, should he wish, produce his own material. The use of one camera and recorder for role playing examination is now standard practice across the industrial and commercial board. However,he chooses his information he will play back through an ordinary television set - as we shall see, in itself a positive move towards greater effectiveness. It is arguable whether television presentation leads to a better assimilation of information than a similar production on films. What cannot be queried is the greater simplicity of the presentation. The presenter or trainer need not become a part-time projectionist. He merely slots in a cassette and presses a button. He can stop the programme whenever he wishes, and the ability to show television in daylight alleviates the problem of note taking in the darkened cinema. And of course cassettes lend themselves to individual use by trainees. This has obvious effective benefits. A cinema cannot operate economically with an audience of one. The video cassette player can.

The use of video cassettes is now a world-wide phenomenon. We are no longer talking about possible future in CCTV, but in case study terms. We may not have reached the cassette revolution promised us by starry eyed journalists in 1967. The domestic market has yet to be quantified and sold on the concept. Players are now only becoming readily available. The story inside industry and commerce is a very difficult one. In Britain the basis of video cassette networks have now been laid. Chrysler, BMW, Concessionaires, Volvo, Ford Europe and IBM are all now using video cassettes both as point of sales aids and as training tools. Meanwhile the insurance houses are now showing a keen interest in the possibilities offered by cassettes. Indeed Abbey Life, Hambro Life and London and Manchester Insurance have all now set up their own television studios and are producing training programmes for video networks in the field.

In doing so they are copying systems which have been in general use in American and Canadian insurance companies for several years. The companies all make similar claims for the effectiveness of what they are doing. Cassettes work best in networks rather than as single units. With a network of strategically placed players a high standard training programme can reach a national audience. A central decision is taken, yet the information reaches its target in a decentralised form. Cassettes can be posted (at a much cheaper rate than bulky and heavy films can) and when

the information they contain becomes out of date, they can be returned and wiped for further use. With cameras in the branches the system can become two-directional. Feedback is introduced, and central production has a continuous critical reaction coming back from the users. So, at least in theory, training programmes get better as time goes by.

Although video tape is being used creatively in Britain we must still look towards America for the kind of uses which completely change corporate practice. Coca Cola is a company which has invested more than one million dollars in a video cassette training project. The idea is to link the video element of the training package to an audio cassette responder. Questions are asked by the television presenter, and time for answers is allowed. During the time the trainee records his answer on the audio cassette. He then has an opportunity to check his response against the correct answer. If it is wrong he is run through the sequence again and is directed towards the correct response. The training programme aims at management as well as shopfloor, though both sectors will use the same machines. The training programme is thus broadened, and each playback unit gets the maximum amount of use. Pepsi Cola, Coca Cola's only soft drink rival in America, has adopted a similar scheme. Examples of training networks are now common. Hewlett Packard in California is alone responsible for 50 colour and 50 black and white programmes a year. Walt Robson, the responsible for this vast project, makes an unusual claim for his video cassettes. He says that the ability to play back a cassette as often as liked has led to a much higher information density than would be possible in a film, or even in a lecture. "We have found a 20 minute video tape represents the content of a two hour lecture. The scheme has proved so successful it now covers the area of service training, equipment applications, personnel development and management training. And it is still early days. It is possible that the cassette is more effective than the live lecture, and that the day of the live lecture will soon be dead. As the price of video tape equipment comes down and the cost of travel escalates, more and more management information is going to be distributed on cassettes, while fewer top executives will waste valuable time in travel round the world."

This multi national aspect of video cassettes is stressed by several companies. IBM now has more than 800 Sony U-Matic video cassette

players and recorders in worldwide use, and has claimed that it can have a programme made in their Armonk, New Jersey, studios at a location in any part of the world within 72 hours of despatch. Usually a more leisurely pace is adopted, but, says IBM's Television Planning Manager, David Z. Shefrin, an even more rapid programme distribution between IBM offices may be possible, and may be needed, in the future. The network has been designed solely for "marketing support and management communications". Shefrin calls his system "information television" and says that he will be processing 200 hours of company originated programming through it during the next 12 months. The scheme is summed up by James Damon, Manager of Audio Visual and Broadcast Services as "putting a face to the memo, having the management going down the line". A likely development will be the origination of programmes at local level. IBM U.K. for example, has already started this process, but at the moment the service is strictly one directional, with cassettes being sent out from U.S. headquarters, but use of cassettes for response is being considered. "Every possibility is open and we are not rushing things along. It's easy to see the way things are going, but I think it is a little early to define that. We still have some learning to do along the way."

The FMC corporation has followed a similar line, but has placed more stress on the different languages of staff round the world. Jim Fox, who heads special projects, says that he is planning for a 75% development of his world wide network over the next three years. FMC has even used cassettes to take the company and its vast product spread into China. A special programme was made and dubbed in Peking Chinese by an FMC staff member. The salesman, on his trade visit to China, was able to take a demonstration with him in the language of the buyers. Another worldwide training network has been created by Holiday Inns. It has 242 cassette outlets within the Holiday Inns American Training Centre and between 40 and 50 programmes are being produced annually. At a recent training conference in London, Tom Jackson, of Holiday Inns, brought what he described as "the entire Faculty" with him in a suitcase of cassettes. While the cassettes could not answer delegates questions they were able to fulfil the lecturing function of a dozen experts. The savings of air travel for those experts alone justified the exercise.

Waterbury, Farrell of Cheshire, Connecticut, report similar savings in their customer training programme. WF manufacture extremely

complex lathes and grinders. Customers need to know how to train personnel to operate the machines, so the company started to produce explanation tape in 196[illegible]. Tapes emphasised the features of the machine tool, especially (in the case of new generation machines) the improvements over the older model. The presenter was usually the product manager for the particular line, or the engineer, or whoever knew most about the machine and therefore was better able to describe it. People working in the field soon began to make requests for special tapes. One tape showed a machine in operation, with an explanation and direct pitch to a programme to a prospective buyer, actually calling him by name. The day after the tape was completed the man watched the tape in his office in Boston. The presentation worked and he bought the machine.

On the training side WF supply a pre-training programme before operators come for an intensive two week training course at the factory. The type of machine tools produced by the company are not stock items and each is built to order. Three months before delivery the customer is loaned a Panasonic ½" VTR and monitor and five tapes. The tapes provide the basic information. By the time the operator arrives for final practice on the machine he is in a position to answer questions and move rapidly into operation procedures.

This is a practical and creative use of the medium, but Americans do not have a monopoly in such applications. Early this year the chairman of BP decided to issue a statement on the future of the company in the light of the energy crisis. He wanted to talk, as it were, face to face with all his employees. The logistics of such exercise ruled out personal appearance. The statement had to be as immediate as possible, so that ruled out film. In the end the chairman went into a television studio and recorded his talk. Video cassette recorders were placed in BP locations around Britain, and within two weeks from production, every level had seen the tape. The situations chosen for display were informal, mostly in canteens and restrooms, this made the whole thing more acceptable. People resent being herded into cinemas to listen en masse to homilies from above. They do not resent so much being able to watch a television at a time which is convenient to them. The message becomes personalised, the employee does not feel he is being got at. The operation proved so successful BP has now decided to make the network a permanent fixture, and work is now going on to bring it into service during the year.

BP was one of the first companies here to recognise the merits and potential of video cassettes. The first commercial use of cassettes in the U.K. went to BP with the setting up of a programme service to its tanker fleet. Sailors on long haul tanker service are prone to boredom. Tankers have a staffing problem, and owners are prepared to go to expensive lengths to keep their crew reasonably contented. One thing research threwup was that sailors missed domestic television. On their frequent appearances at home they found they did not really know what had been going on television. Apparently many letters from home refer to television programmes. The lack of television became alienating. Ships have had a feature film service for years, but strangely this also proved divisive. The pattern ashore is one of television consuming rather than trips to the cinema. Going to the shipboard cinema twice a week only made the men feel still further away from the patterns of family life ashore. The solution came with the installation of cassette players, and the provision of contemporary broadcast television programmes transferred to cassettes. Now that the cassette player exists BP is considering putting them to training use as well. The company which made the BP installations, Telmar, has since been taken over by another company with a ship's television service, Walport. An average of four installations a month has now been achieved, and the service shows every sign of growth industry.

Car manufacturers have been among the first to see the advantages of cassette television. In America the Ford Motor Company has placed 5,500 U-Matic units in their dealers' showrooms round the country. The scale of the operation is vast. Programmes sell Ford's full product range, and have proved particularly useful in illustrating what Americans call "customizing options". Also in the commercial vehicle sector Ford has found the system shows a client the body options and facilities on a truck, giving the potential buyer an exact description of his options. Many of these would not be held in stock, but the cassette brings them into the showrooms. Mechanic training is another feature of the programme, a use currently being taken up by Chrysler U.K. Chrysler has not as yet issued any statement on the size of their network, but it will follow the Ford pattern. Other manufacturers, including Volvo, are in the middle of installation. BMW Concessionaires have also experimented with cassettes, and have now committed themselves to a U-Matic based network.

Ford Europe is the odd one out, having established an international executive network, rather than a dealer structure. Ford's 17 European head offices have now been equipped, again with Sony, and programmes are being made at Ford Staff Headquarters in Essex. Norman Vigars, who has been researching the use of cassettes for Ford since 1967, says that the company is not rushing ahead. "The economic climate has limited our operation, but we have taken the first vital steps. Ours is a multi-national company, and this is a multi-national exercise. We will eventually operate at a dealer level as well, but for the time being communication will be for top management only. Much of the information will be of a highly confidential nature."

Conceptually, all these applications are meeting training challenges with creative video solutions. It would however be a mistake to think that a video solution can be found for every problem. While much of the production work is of a high standard, some is frankly appalling. Managers too often get carried away when they get their hands on a television. We know how attractive television appearance can be. There is also a danger of creating problems so that a television solution can be found. In some areas print is still the best way of communicating information. Some American productions seem, to English eyes and ears at least, offensively simple. Employees are talked to from cassette as if they were children. Bad television can be counter-productive. We hear a great deal of the savings to be made in travel. Waterbury Farrell claim to have amortised hardware costs of $35,000 in the first year of operating in travel savings alone. But that is America, where all things, especially transport, are on a vaster scale. It is sometimes questionable whether video cassette instead of people in a U.K. context will represent such a saving.

SUMMARY

The range of case studies presented in this report can be viewed as representative of the imaginative uses of CCTV in the restricted field of enquiry.

The brief analysis which heads each abstract aims to give some objectivity and structure to the studies as a whole. It must be borne in mind that this is a restricted study of approximately eighty pages and the basis of the report is to furnish evidence of the imaginative uses of CCTV outside the sphere of formal education. It would be unlikely to find evaluative systems which would correspond to academic reporting, indeed it would be unfortunate, in the editor's view, if such reporting were essayed in this context.

The Association owes very grateful thanks to its independent contributors who have sustained a good deal of questioning and revision with most excellent co-operation. It is indeed a remarkable tribute to them that such a report as this can be offered after six months' compilation on an honorary basis.

The quality of imagination displayed in the case studies we submit may be suspected to vary; the study is so often a relative statement because it is a more imaginative system of training or demonstration than traditional procedures. CCTV is still new enough to some trainers for its virtue to be immediately obvious and, within their own circumstances, these advantages quickly become stereotyped. Thus it has been by no means an easy task to provide the studies; indeed it is probable that only the very experienced and large institutions are likely to have the repertoire of experimental usage from which to quote with reliable conviction.

The studies reveal that very effective work can be done and an acceptable presentation achieved using the economical ½" range of video tape machines; indeed it is often preferentially included because of its portability and compatability. The Army study in particular stresses the cost-effective argument for using CCTV and the argument is implied in many of the other studies. Whilst it is reasonable to expect the cost per trainee to decrease with each subsequent successful showing of a CCTV tape it is still true that the strategies of learning from

packaged material needs the endorsement of a human mediator. The extent of this mediation affects the true cost. Nevertheless in studies such as that quoted by the R.A.F. on the "Jaguass" training scheme the economies appear to be obvious and attractive.

Much of the advantage of CCTV rests in its distribution facility and the accounts contributed by "Insight" suggest powerfully that the cassette network is a training technique due for considerable and early enlargement. Since cassettes embrace colour capability, their use as training and information channels is likely to find wide endorsement, especially amongst those who are just starting to use CCTV.

The case studies all demonstrate one significant feature: the introduction of CCTV into the training of staff and management brings about considerable revision and updating of training techniques. Some studies suggest that quality and effective training can be achieved economically. The quality and effectiveness of the imaginative function is more subtle and elusive; it perhaps best arises in the reader's own mind as he peruses the case studies.

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